The Journal of the American Medical Association

VOL. XX. CHICAGO, JANUARY 7, 1893. No. 1.

ORIGINAL ARTICLES.

THE MORBID PROCLIVITIES AND RETROGRESSIVE TENDENCIES IN THE OFFSPRING OF MULATTOES.

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 7, 1892.

BY W. A. DIXON, M.D.,

OF RIPLEY, O.

Observations extending over a period of more than thirty years have thoroughly impressed the conviction upon my mind that the offspring of mulattoes are the subjects of constitutional diseases to a greater degree than are those of unmixed blood, and that when confined strictly to their own class, they scarcely reach the fourth generation in descent, by reason of disease and sterility.

I have often wondered if others have had occasion to notice this feature in mulatto life, or whether the conclusions at which I have arrived are false and unwarranted from being based upon observations confined to a local district, yet rich in examples that go far to establish the view propounded. I believe that there is not much to be found in current medical writings upon the subject. Our locality is on the border between the free and the slave States of fifty years ago and more. It was then and long before had been, the custom of many wealthy planters, as they advanced to old age, to set free that portion of their estates which bore to them a filial relationship, and establish them in homes, in a section of country, where they would receive fair treatment, consideration and respect, as citizens and members of the community in which they should reside.

Such an opportunity was offered to them in our locality largely populated by abolitionists and sympathizers with the slave.

Thus, a community as it were of mulattoes, whose parents on the father's side were white men, mostly of great wealth and position, socially and politically, and principally of New England stock, existed near us.

The most of these people were complete types of physical perfection, tall, muscular and perfectly developed.

Many of them lived to old age, quite to one hundred years. Their wives were mulattoes. They were proud of their parentage and light color of skin. They made good citizens, and often were prosperous, as farmers. Their prosperity and pride almost separated them from their less fortunate brethren of darker color, and their children intermarried, that their color and race might continue.

I can trace some of these families through three or four generations. Those of the first cross were robust; those of the second were paler, more ashlike in complexion, of slender form, plainly bearing many of the characteristics of predisposition or inevitable tendencies to special diseases, of the strumous type. The third union resulted in less fertility and greater predisposition to disease. Now, the children present the scrofulous physiognomy. The fourth union, still less fertile than the others, brings forth a progeny largely suffering from cutaneous affections, opthalmia, rickets, dropsy of the head, white swelling of the knee joints, morbus coxarius, diseased glands, suppurating sores until the whole generation is quite extinct. I can scarcely find any of the fourth generation in good health.

These people have had all the advantages that their neighbors enjoyed. They had the best of schools, excellent religious privileges, were moral, upright, and highly respected.

They were able to maintain an academy of learning, from which their sons and daughters could go forth amply equipped to struggle in the unequal contest of life. All of these institutions succumbed to the waning constitutional vigor of their offspring. The academy is no more. The schools and churches, so ably maintained by their forefathers, are extinct.

The old family name is scarcely heard, and inquiry reveals the fact that their offspring were tuberculous, and either died in youth, or, if living, were so sterile that no descendants scarcely of the old families can befound.

This is true not only of one, but of many groups of families. The contrast between the histories of the mulatto and the white and the negro families residing side by side, as to health, as to power to resist disease, and as to longevity, is too great to escape notice, or to be regarded as merely incidental. It is now observable by the colored people themselves that if a mulatto marries back to the parent stock, the children escape to a greater degree scrofulous affections.

I have spoken to a number of physicians in this locality upon this subject, and they all agree that tuberculosis exists to an excessive degree among the mulattoes: that they are inferior in vitality, intelligence, and consequently morality, that they exhibit a mortality more considerable than that of the surrounding whites or negroes, and without reunion with the parent stock the mulattoes would soon become extinct. In the first generation they are quite prolific among themselves and arrive at maturity rather promisingly, but when these children intermarry they and their offspring are not prolific, a large portion being sterile, at even the second and third generations. It is noticeable that the mulatto girls develop in advance of both white and negro girls, but fade away as women, much sooner. It is noticeable also that in the second and third generations of pure mulatto intermixture, that quite all the children born are girls, which are noticeably sterile.

This fact I have observed so much that I believe it to be a physiologic truth. I would be pleased to learn if the observations of others who have given any notice to this subject confirm my own.

If this be true in one locality and in the mingling of the white and black races there, why not look for the same result in the cross of races elsewhere, and thus the introduction of the virus of constitutional diseases, which is transmitted through the succeeding generations?

I believe that ethnologists mainly agree that human hybridity cannot be maintained without reversion, or fresh supply from parent blood. Dr. Robert Knox, in his work on "The Races of Men," says: "I do not believe that any mulatto race can be maintained beyond the third or fourth generation by mulattoes merely; they must intermarry with the pure races or perish." M. Georges Pouchet, says "that such a race, such a type can only have an ephemeral existence." Dr. Paul Topinard refers to a record on this subject in North Carolina. "There the caste of free men was constituted entirely of mulattoes freed by their white fathers. The State, dismayed at the important position which they assumed, put a stop to this liberation. Left to themselves their number diminished at the rate of 29 per cent.decennually.'

Ethnologists "have sought in vain among the nations of the earth for a race manifestly hybrid, with well defined characters, intermediate between two known races, perpetuating itself without the concurrence of the parent races."

Dr. Prichard in his natural history of man, in his effort to find such, subsisting by themselves, could only point to three instances. The Griquas, the Cafusos, and the Papuans. Broca and others object to the truthfulness of these examples, and assert "that by no means do they prove that a mixed race can perpetuate itself separately."

If Dr. Pritchard, in his vast researches, finds it difficult to discover three examples only of hybrid races subsisting by themselves, and they so liable to objection that the other ethnologists deny the proof to be conclusive, then may we not inquire into a cause for the introduction and propagation of diseases, physical weakness, sterility and conditions unfavorable either for moral or physical development, beyond the microbe or bacillus.

The same causes that degenerated and brought to an ignoble end some of the royal lines and the most ancient blood of Europe are at work still, and in our midst also. Look, and wherever you see the greatest intermingling of races, there you see raging tuberculosis, carcinoma and struma in all their terrorizing forms, there you see an excessive mortality among the children, a disparity between the number of men and women, the women being in the majority; there you see the scientist with his microscope hunting for the enemy of life and health in the sputa, the excreta and the cell elements, when in fact the modification of the racial type, by the influence of some media not apparent in the cell elements themselves, altered in some way by the process of miscegenation, generates this virus — these microbes, these bacilli, which claim for their victims more than 25 per cent. of the dying.

Are there any races comparatively free from tuberculosis and all strumous affections? Wherever you see the purity of race maintained, in civilized or barbarous countries, there you see little or no tuberculosis and scrofula. Do these affections prevail among the Jews and other unmixed races to anything like the extent, that we see in countries overrun by immigrants of every race, producing crossed races, without limit or regard to race affinities?

Broca mentions the assertion of several ethnological writers, "that the United States, where the Anglo-Saxon race is still predominant, but which is overrun by immigrants of various other races, is by that very circumstance, threatened with decay, inasmuch as this continuous immigration may have the effect of producing a hybrid race containing the germ of disease, decay and future sterility." There are serious men who have predicted from ethnologic causes, the overthrow of the United States, just as Ezekiel predicted the ruin of Alexandria."

The difficulty in finding instances in the past of nations surviving such influences may excite faith in the prediction, in spite of our unexampled growth, that the fundamental facts as to the perpetuation of crossed races, will ultimately prevail, even in our own country.

In conclusion, I am fully conscious of the fragmentary nature and narrow scope of this paper. I have made no attempt to go into the literature upon this subject, with which, indeed, I am too imperfectly acquainted. I have simply endeavored to briefly set forth these crude ideas which have been the outgrowth of my own observation. If they stimulate the profession to a livelier sense of the importance of looking back beyond the bacillus, and of teaching purity of race, in order to secure greater freedom from tuberculosis, greater immunity from cancer, less mortality, less imbecility and insanity, and greater longevity, than are found among any race of hybrids, it will fulfil the object for which it was written.

CONTAGION OF SCARLET FEVER.

Read in the Section of Diseases of Children at the Forty-third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY E. F. BRUSH, M.D.,
OF MOUNT VERNON, N. Y.

The two words, contagion and infection, are often used indiscriminately, and many a writer who starts with a definite idea of the word "contagion," will often before he gets through with what he has to say confuse it with the word "infection," and very few people who have not given the matter special study, can give the distinctive difference of definition between the two words. Our dictionaries are in the same confusing condition concerning these words. Thus: *The Century Dictionary:* In common use no precise discrimination of the two words "infection" and "contagion" is attempted. *Webster:* Infection, the transmission of affection without direct contact. In contradistinction to contagion. *Billings:* Contagion, capable of communication from one person to another either by actual contact or through the air. *Foster:* Contagion, the communication of disease from one individual to another by means of direct contact. Or as used as some writers (in the sense of infection) by effluvia. *Worcester:* Contagion, the communication of disease from one person to another by contact, direct or indirect. *Dunglison:* Contagion and infection are generally termed synonymous.

Dr. Pruden has recently tried to untangle the con-

fusion which exists in the common use of the terms, contagion and infection. He writes in a paper read before the New York Academy of Medicine, Jan. 21, 1892: "There should be among ourselves none of the old indefiniteness regarding the exact meaning of such terms as infection, infectious disease, contagium, contagiousness and the like."

The meaning of these terms was of necessity uncertain when the things themselves which they were intended to specify, were largely matters of speculation and conjecture. It were well, perhaps, if they were dropped wholly from our speech and replaced by new words coined in the new light. But as this may not be, the next best thing is to remodel the meaning, and with this to reinvest the words.

I think I do not err in saying that those who can justly speak most authoratively in this matter are agreed that in the light of to-day, an infectious disease is one which is caused by the invasion and reproduction within the body of pathogenic microörganisms; not necessarily an invasion by bacteria, because in one case, at least, malaria, the invading pathogenic microörganism is not a bacterium, but belongs wholly to a different class. The invading microörganisms which we must assume to cause the exanthemata are wholly unknown to us, but the nature of these diseases justifies us in grouping them with those infectious diseases whose causative agent is definitely known. Infection is the condition produced by the entrance and multiplication of pathogenic microörganisms within the body.

The word contagious no longer covers infinite possibilities in the unknown, or carries with it the mysterious terrors of the unknowable. The contagium in any infectious disease is for us to-day the particular pathogenic microörganism itself, whose advent in the body ushers in those reactions of the body cells which we call disease. The contagium of an infectious disease is a particular thing, which has length, breadth and thickness, and weight and the varied powers of the lowly forms of life.

An infectious disease is contagious when its contagium, that is, the microörganism which causes it, under the ordinary conditions of life, can be freed from the body of a diseased person, and by whatever means conveyed to the body of another in a condition capable of lighting up the disease anew. The old indefinite distinction between infection and contagion, by which one strove to express, among other things a fundamental difference between the conveyance of disease by personal contact and by aerial transmission, has become impracticable and valueless now, because we know to-day that the differences in the mode of communicability of infectious diseases are largely dependent upon the physical qualties of the contagia, upon the places and ways in which these are freed from the body, and upon the places and ways in which they enter the bodies of the new victims.

The moment we know exactly what we mean when we speak of contagium, the moment we have learned to follow the movement of these particular contagia as they leave the bodies of their victims—in one case in the stools, in another from the skin, in others from the mucous membranes, and can trace their diffusion and life stories in earth, air or water; the moment, I say, that we can bring the light from these varied factors to bear on the clinical stories of infectious disease, we are not only in a condition to talk plainly about the degrees of contagiousness, but to study the conditions under which degrees of contagiousness may vary in nature or be varied in art.

It is an unfortunate circumstance that the most common notion of a contagious disease is derived from those which are most dreaded and most liable to spread—from such diseases as the small-pox and scarlet fever—so that the common conception of a contagious disease is of one which necessarily taints the air about the victim—surrounding him, so to say, with an infectious atmosphere. But this notion is wholly groundless with any disease common with us outside the exanthemata, and is apparently reasonable here only because the contagia of these diseases are unknown to us, and are probably cast off through the skin, and so easily diffused.

The fact is that such infectious diseases as typhoid fever, diphtheria, and tuberculosis can be highly contagious or made scarcely at all so, depending upon the care or lack of care which is taken by the victims or their attendants in the disposal of their varying exudates or discharges."

Now, it does not seem to me that he has simplified the matter at all. Of course, if we are to consider bacteria as the prime cause of specific disease, then we must have a term to express the condition that arises from these agents and separate entirely from the bacterial diseases, the terms contagion and infection. There is an attempt just now to do this by the use of a new word, chemotaxis. Of course, before this word can be used it must be worked into tenses, for it has always appeared to me that one of the main difficulties with the term contagious is that it has no past tense, and the word infection has. We can say a person has become infected with an infectious disease, but when we wish to use the past tense with contagion, the only word I can think of is contamination. Now the word contaminated expresses a condition of soiling, or more vulgarly, dirtying, and really this is the sense in which it should be used. Thus, one becomes contaminated with syphilic virus just as much as if he was contaminated with feces or any other matter. And from this point of view I have been teaching for some years that contagious diseases are those in which it is only possible to contract the disease by becoming contaminated either by coming in contact with the diseased person himself, or through something he has himself previously contaminated. Now, with this understanding of the term, the danger associated with a given disease would be clearly defined, because we would all know that a contagious disease would only be dangerous by contamination, either by food, clothing or any material thing that has been in actual contact with the diseased body. While the term infection should be used only with those affections that infect the atmosphere, like exanthemata, and it can also be used to express some of the nervous affections. Yawning often becomes infectious and in like manner hysteria does also. It is in this sense that Shakespeare used the word, "Infected be the air whereon they ride." With this view of the terms, we would classify scarlet fever as an infectious malady as are all the other exanthematous diseases. Of course all the dangers of a contagious disease are associated with the infectious diseases, but there is an extra danger in infectious diseases by reason of becoming affected without contact. But the vagaries of scarlet fever have been a stumbling block to everyone since the disease was first known.

Prof. Stiles in a recent correspondence in the *New York Medical Record*, writes: "Prof. Chapman, who held the Chair of Practice in the University of Pennsylvania from 1833–36, affirmed positively that scarlet fever was not contagious, and for some years the matter remained undecided. But with the disease in our time, I do not believe that any one holds this opinion now. From the best evidence we possess, the disease is comparatively new. It was not known in Europe until the time of the Crusades. It appeared first in Japan in 1610, and in America in 1735. It seems to be confined to the white thin skinned races as the negro and the Japanese are not affected, and it does not flourish in Hindostan. It is curious about the negro, he takes the measles in a very malignant form, but enjoys immunity from scarlet fever, a disease that until recent times was confounded with measles, and both diseases came to America from Asia during or immediately following the Crusades.

Scarlet fever was a very rare disease in America during the last and beginning of the present century. So much so that Dr. Rush, about the beginning of the present century, makes the remark, "that no physician here would be likely to see it more than once in a lifetime." Just to give an idea of the views prevailing in this country forty years ago, I quote from a Systematic Treatise, Historical, Etiological and Practical, "On the Principal Diseases of the Interior Valley of North America," by Daniel Drake, edited by Hanbury Smith, and Francis Smith, M.D., 1854. "A malignant form of scarlet fever affected the first settlers of Kentucky and Ohio in 1793. It was always fatal at Marietta and Belpree, the oldest settlements of the State of Ohio. It was most dreadfully destructive among the children and young persons, attacking and destroying nearly all the former. It is worthy of remark that at the time of this epidemic the country was an almost unbroken forest, and the emigrants lived in open cabins, and subsisted on a simple diet, very often deficient in quantity. From this time until 1803 I do not know that any form of scarlet fever appeared in the valley of the Ohio, but since this date, that is, for the last twenty-five years, it may be regarded as one of our epidemics, having at no time been absent from the valley of the Mississippi, and the Lakes. In my personal intercourse with physicians, I scarcely conversed with one north of the 33d degree of latitude who had not seen the disease once or several times, though many south of that parallel had never met with it. Of its introduction into most of the localities in which it has pervaded, we absolutely know nothing. I have never been able to trace up a single case at Cincinnati to importation by patients or families, nor as far as I know, has a case of that kind been made out.

Pervading for several months or a year one place, the people of surrounding places although they maintained the usual intercourse with it will remain exempt. When it appears in a family, it seldom attacks all the liable at the same time, but more commonly does so progressively, while one child in each of a number of neighboring families may be seized simultaneously. Presenting such habitudes, we need not be surprised that our physicians, like those of other countries, differ in opinion as to the course in which it propagated itself. A part believe it is never infectious, another part, as appearing and spreading solely by infection. A third and a larger portion, consider it to have originated de-Novo, but to be capable of propagating itself, and the truth probably lies between them. Thus we see how many different opinions there are regarding scarlet fever, and the disease will continue to puzzle us until we know vastly more about infection and susceptibility than we do at present. I have seen cases arise in children that could not by any possible means have been exposed to infection of recent origin, and I have seen children exposed to the disease in its most malignant form and not take the infection. If the materia morbi retains its virility for the long period it has been supposed to do, then we may in any ordinary house get some infected material in our homes through the ordinary supplies of food or clothing, etc.

A very remarkable case is cited in the *Times and Register*, March 12, 1892. Dr. W. E. Holland writes as follows:

"The following is an accurate statement of a case which came under my charge some four months ago. I was called to see a boy fourteen years of age. His mother said he had a strange eruption appearing on his face and body. After inquiring and making an examination of the case, my mind at once reverted back to the hours that I had the pleasure of listening to your lectures on the practice of medicine, and especially your lectures on scarlet fever, and hearing you say the germ would live for years in the laid away clothes of persons who had suffered from the disease. At the time of this case there were no cases of scarlet fever anywhere within a radius of twenty miles. I carefully inquired of my professional brothers of the section, and they said they had no cases of scarlet fever. I then made a very careful examination of the house all through, and in the garret in the corner stood an old chest, which had been handed down from one generation to another, and had been used to store away old clothes. I then asked the mother if any of the family had been sick with, or had died with the scarlet fever. She replied that her father had come home sick, and the physicians said he had scarlet fever. He laid sick for some weeks and died. I then asked what had become of his clothes. She said they had been stored in the old chest in the garret for thirty-five years, but that she had recently taken a pair of her father's pants and made out of them a pair to fit his grandson. The latter had only worn them a few days when the rash made its appearance."

In the same journal, Dr. Backwood, of Philadelphia, writes:

"I know beyond question that a suit of clothes which the patient outgrew during his illness, was the cause of giving the disease to a poor child to whom the articles were given, a year after the original patient had gotten well, and the garments were kept in camphor, etc., all that time to preserve them from moths."

Now, in contrast to this let me cite a recent occurrence that came under my own observation. A lady sent for me one afternoon a few weeks ago. When I reached the house I found her in a state of excitement. Three of her children were ill with ordinary functional stomach trouble. One of the children was complaining, and requiring the mother's constant attention, and several times the servant girl, who had been in the family only a few days, came

into the bedroom to do some errand, and each time she would say, "That is just the way my brother acted." As the servant had only been in the family a short time, the lady took no notice of the remarks at first, but finally asked what was the matter with her brother, "Sure, ma'am, he died of scarlet fever two weeks ago." Then the lady questioned her closely, and found that the servant was one of eleven who lived in a tenement house in one of the lower wards of New York City. Four of them had scarlet fever, and one boy of twelve had died. And the girl came from that infected tenement house with the same clothes she wore during the prevalence of scarlet fever. The lady, of course, ordered her out of the house in a lively manner, but still none of the children took scarlet fever. A circumstance like this proves nothing, and is only interesting, as is the following taken from the *Times and Register*, March 12, 1892. Dr. R. V. Salmon, of Dadeville, Alabama, writes as follows:

"Your letter of the 18th inst. received asking for a letter from me on scarlatina. My reply may sound a little queer, but we have had no scarlatina in this section since 1856, though it has been thirty miles on the same railroad."

The question as to what gives immunity, is, of course, the interesting point in the discussion of this disease. The black and dark thick-skinned inhabitants of the earth are immune. We must infer by means of this difference in their skins, because as far as we know, there is no other physiological difference. The question that occurred to me, and in fact, my reason for studying the subject at all was to settle in my own mind, whether or not in a case of scarlet fever occurring in one of a family of children, is it advisable for the unaffected children to remain at home, or ought they to be sent away? This question came to me personally during a sorrowful experience, and I was unable to settle it fully. I remember three instances, one several years ago, before I had studied medicine. A Presbyterian minister had three children, two boys and one girl. The girl was attacked with scarlet fever, and at once the boys were sent away from home. The girl made a good recovery. Everything that could be done to make the house clean with disinfectants, etc., was completed, and several weeks elapsed after the girl's recovery when the boys came home. They both took the disease, and one died. I have known personally the occurrence just like this. Then on the other hand, a family living on the same street with me in Mount Vernon. Four children, one was attacked with scarlet fever, the other three children remained in the house. The mother took care of the sick boy until he died; she mingled with them and with other members of the family, but none of the others sickened.

Dr. Campbell related to me a case that occurred in his practice. Of a family of eight children, one sickened with scarlet fever, and was isolated in an attic room. The case progressed favorably. During the peeling stage the sick child was left alone by the nurse for a few moments, and when she returned to her charge, she found the seven well children in the room playing with the desquamating case of scarlet fever. Not one of them took the infection. If these children had been taking belladonna as a prophylactic, what would the verdict be? These and many others of like nature, make me think that there may be some sort of immunity by reason of a child living constantly in an infected atmosphere, if it has escaped the first infective influences.

We have an analogy in some of the cattle diseases. There is an infection in cattle known as Texan fever. It belongs to the anthracoid class of diseases, and the native cattle of Texas can have the affection and not be disturbed in their general health, but if one of these affected Texan cattle mingle with any bovines not natives of Texas, or if some of the non-natives cross a track previously travelled by Texan cattle, they are attacked with the disease, and ninety per cent. of them die.

There is also an endemic affection among the cattle on the steppes of Russia, known as petechial typhus, which is so mild with the natives as to call for little or no attention. But if any animals not natives come in contact with the diseased cattle, they take the affection and die. So, I believe many diseases create by their own virulence an immunity in individuals who have lived in the infected area. And so I believe from the facts that have presented themselves to me, after years of close observation, that the children in a household, who have escaped the first infective influences of an invasion of scarlet fever, are safer to remain in the infected area than they would be if removed to another house or region. I am willing to admit that this is largely a matter of opinion, but the question often arises, and will continue to be a serious subject to the practioner. Therefore, it is worthy of further study. As a prophylactic measure with children unaffected, and in a household where the disease exists, I recommend the skin and entire body to be anointed with a weak solution of carbolic acid in olive or cotton seed oil, morning and night, and a gargle composed of half an ounce of fluid hydrastis, in a tumbler of water, used three or four times daily. For I believe the site of invasion of all the exanthematous diseases to be the skin, and sometimes the mucous membrane lining of the upper air passage, and hence the reason for the prophylactic measures recommended.

A PLEA FOR EXTRACTION AND REPLANTATION, AS A MEANS OF CURE IN OBSTINATE ALVEOLAR ABSCESS.

Read in the Section on Oral and Dental Surgery, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JOHN S. MARSHALL, M.D.,
OF CHICAGO, ILL.

Mr. Chairman and Gentlemen of the Section:—In the presentation of this subject I make no claim to a new discovery, for the operation is an old one and has been occasionally practiced with varying success for many years. I trust, therefore, that I shall be pardoned for introducing a subject in this presence which cannot be classed as a new operation, or an entirely new method of treatment. Methods however, are sometimes improved and I shall be content to leave to your good judgment whether the line of treatment to be presently indicated is rational and justifiable, and any improvement over the methods generally pursued.

One of the first and most important principles of surgery is the conservation of diseased organs and tissues, provided they can be restored to a healthy condition, rendered more or less useful for the pur-

poses for which they were created, and incapable of harm to other members or the general system.

In these days of antiseptic surgery, many things are accomplished which a few years ago would have been considered highly dangerous or impossible. The abdominal cavity is now opened with impunity, and operations made upon the enclosed vicera, that to say the least, are startling: The chest is explored and portions of the lung removed; the cranium is perforated, and tumors extracted from the superficial and deeper portions of the brain; and yet the individuals operated upon live to tell the tale.

In no department of minor surgery has greater advancement been made than in dentistry. Most of the diseases of the mouth and associated parts are now more successfully managed, and thousands of diseased teeth are restored to health and usefulness every year, that were formerly consigned to the forceps, and this has been largely the result of a better knowledge of the causation of many diseases and how to prevent and to combat the inflammatory processes by aseptic methods.

I was led to adopt the practice of extracting and replanting teeth for the cure of obstinate or persistent alveolar abscess on account of the failure—in my own hands and those of others—to cure a considera- percentage of these cases by the ordinary means at our command.

By obstinate or persistent alveolar abscess, I mean those cases of alveolitis in which the inflammatory symptoms persist after all the ordinary means of disinfecting and filling the root canals, etc., have been faithfully tried without avail.

This form of aveolar abscess is usually the result of a crooked root or an abnormally small root canal, making it impossible in either case to remove the putrescent pulp or render innocuous the retained septic material; or perforations of the root made in attempts to open small root canals; or erosion of the apical end of the root; or the presence of broaches, filling material or dressings, which have passed the apical foramen; it is accompanied by a more or less persistent discharge of pus, either through the external or internal plate of the aveolar process, or through the alveolus at the neck of the tooth. Occasionally cases will be found in which no discharges are present, but instead, a chronic induration of the surrounding tissues, or as in the superior teeth, the discharges may find their way into the antrum of Highmore or the anterior nasal passages, and possibly mislead the surgeon.

These teeth are usually sooner or later condemned as harmful or worthless members of the body and are removed.

It is this class of teeth for which I make my plea, and I believe from a practical experience extending over a period of several years with this method of treatment, that a majority of them may be rendered healthy and useful for an indefinite period.

It is perhaps hardly necessary to say that replantation is only admissible in the anterior teeth, including the bicuspids. The molars are not capable of being replanted only in exceptional cases, when there is fusion of the roots, and they assume a conical form, and occasionally a lower molar, where the roots are perpendicular to the crown.

I think it will be generally conceded that attempts to cure *in situ* such cases as those just mentioned, usually prove unsuccessful, and that eventually the teeth are lost. This, I believe, results from the fact that such operations are largely, *per force*, only guess work. If the root is curved at a more or less acute angle, it is difficult to follow the canal with the broach, and many times quite impossible; or if the canal is abnormally small, the finest broach may not enter at all. Drilling is unsafe; and under these conditions the various antiseptics and liquified filling materials are unsatisfactory; because they do not always penetrate to the end of the canal, and consequently septic material remains in the root and keeps up a constant irritation.

In cases of erosion of the apical end of the root, amputation of this portion *in situ* is rarely successful in curing the disease, owing to the difficulties in smoothing the stump and perfectly filling the apical foramen. The same may be said of attempts to plug perforations of the sides of the root. In those cases where broaches, filling material or dressings have passed the apical foramen diagnosis is difficult, except by trephining the alveolar plate and this has no advantage over extraction and replantation.

Roughened surfaces and foreign substances are not kindly borne by the tissues which surround the roots of the teeth. It is therefore imperative that all such hindrances to a return to the normal condition be reduced to a minimum.

For these reasons it would seem preferable to extract and replant such teeth if they do not speedily prove amenable to treatment by the usual methods; for, with the tooth in the hand, the root can be minutely inspected and any eroded portion amputated; and the surfaces finely polished. The root canal can be reamed out and cleansed without fear of perforating its sides; the canal and the apical foramen or a perforation, plugged with gold and carefully finished, and the whole thoroughly sterilized by immersion in bichloride of mercury solution 1 to 500 of water (tepid) for thirty minutes.

None of these operations are possible with the same degree of perfection while the tooth is *in situ*; they must be more or less imperfect; and just in that degree will they produce irritation, and the more serious inflammatory processes.

The question might be very properly asked, "Are the operations of replantation and transplantation of freshly extracted teeth having the pericementum attached, founded upon physiological law and sound surgical principles?" I answer, yes! Quite as much so as are the operations of skin and bone grafting, and no one condemns these. Union with the tissues with which they are placed in contact is the result of the same vital processes; the surgical conditions are nearly identical in each of them and success is as certain in the one as in the other; provided the same aseptic conditions can be maintained until union is complete. Failure of replanted teeth to unite with their alveoli is much less common than with transplanted and implanted teeth; at least my personal observation bears out this statement. The immediate cause of failure in replanted, transplanted and implanted teeth is usually suppurative inflammation induced either by mobility of the tooth which constantly breaks up the attachment of the plastic exudate; or septic condition of the tooth, or its alveolus at the time of the operation; or inoculation afterwards from a filthy condition of the mouth.

The failures which occur later, viz.: after attachment has taken place, are more difficult to under-

stand. In these cases the surfaces of the roots are attacked by the osteoclasts and gradually honeycombed; or masses of tissue are dissolved at various locations, leaving large cavernous excavations with sharp edges; suppuration accompanies or follows the work of the osteoclasts; the tooth becomes loose, and is sooner or later expelled from the jaw as a foreign substance.

In explanation I would venture the opinion that these phenomena are due to irritation induced by a septic condition of the dentine, resulting from decomposition of the organic material contained in it, and that in the form of a gas or effluvium it penetrates the cementum, and, coming in contact with the pericementum and surrounding tissues, sets up this retrograde metamorphosis.

There are certain individuals for whom it would not be wise to undertake the operation, viz.: those suffering from general anæmia, tuberculosis and syphilis. Such people are never good subjects for surgical operations, as their tissues are very irritable. They do not as a rule heal readily, and are prone to suppuration and sloughing, consequently replantation, transplantation and implantation, if performed upon such persons, are likely to prove unsuccessful.

Many of the failures from these operations that have come under my notice, have been associated with one or the other of these diseases. Great care should therefore be exercised in the selection of the cases upon which to operate. Carelessness in this regard can only result in failure.

Of the many operations which it has been my privilege to perform, it has not thus far been my misfortune to be obliged to record a single failure, although they have comprised all grades of the disease, several of long standing, and ranging in duration from a few months to fifteen years. But I refrain from mentioning individual cases, for fear of wearying you.

The after treatment consists in frequent irrigations of the mouth with antiseptic solutions; among the best of which are the Thiersch solution composed of boric acid, 12 parts; salicylic acid, 4 parts; water, 1000 parts; and another consists of listerine, 1 part; water, 3 parts.

Bichloride of mercury solutions are not permissible on account of the danger from poisoning and the blackening of the teeth.

We are all no doubt interested to know the character of the union which takes place between the root of the replanted tooth and its alveolus, but so far it has not been positively demonstrated. I would therefore like to offer a few thoughts which I trust may tend towards the elucidation of this question.

Applying the methods employed in physical diagnosis to these cases, we find that percussion gives the most marked signs. Taking the percussion note of normal teeth, produced by striking the tooth with a steel instrument as the standard of pitch, we find that as inflammatory conditions of the alveolus advance, the percussion note becomes lower and dulier; while on the other hand, as these symptoms subside, the note assumes a clearer and higher pitch. This lowering of the tone is doubtless the result of a thickening of the pericemental membrane, and its increased vascularity.

The percussion note given by a large percentage of replanted teeth a few months after the operation or when union is complete, is much clearer and higher pitched than that of the adjoining teeth. This is more noticeable in the superior than the inferior teeth, on account of the greater resonance of the superior maxilla.

These facts would seem to indicate that a bony union takes place in these cases between the root and its alveolus. It would also seem probable that the locations at which this anchylosis would most likely occur, would be where the pericementum had been destroyed, or the cement tissue partially removed, and I can see no reason why under these conditions union may not take place in the same manner as with fractured bones. In other cases the percussion note is normal. This would indicate a normal reunion of the pericementum with the alveolus; but where the percussion note is lower and duller, it would be certain evidence of an indurated pericementum, or other inflammatory symptoms.

In conclusion, let me emphasize the following points as necessary to insure success in these operations:

1. Exclude anæmic, tubercular and syphilitic cases.

2. Secure thorough aseptic conditions of the surfaces of the root and pulp canal, by washing and immersing in bichloride of mercury solution 1 to 500 of water.

3. Amputate and smooth all eroded surfaces but sacrifice as little of the pericementum as possible. This is very important.

4. Hermetically seal the pulp canal, and apical foramen, and any perforations that may exist, with gold fillings.

5. Curette the abscess cavity, remove the blood clot from the alveolus, and wash both with the bichloride of mercury solution before replanting the tooth.

6. Secure immobility of the tooth by a ligature or an interdental splint, until union has taken place.

Venetian Building.

DISCUSSION OF DR. GRADLE'S PAPER.

(*Concluded from page 774, Vol. XIX.*)

Dr. Fletcher asked if the peculiarity of the extent or position of the antrum was indicated in any way by the shape of the face. For instance, is the antrum farther back in a face with high cheek-bones, or is there any similar indication in regard to it?

Dr. Talbot said that as far as he knew there was nothing to indicate the extent or position of the antrum from the form or character of the bones of the face.

Dr. J. S. Marshall hoped that something would be said of antral disease following the grip. He had had four cases, in each of which there had been discharges into the nasal cavity of thick mucus.—not bad smelling, nor was it pus, but simply apparently an excess of mucus which had filled the cavity and was discharged through the nose. He thought it advisable to open into the antrum between the roots of the second and third molars, as this is usually the most dependent part of the cavity. He usually used, as an antiseptic, Thiersch's solution,—a bland antiseptic, and very sasisfactory.:

Boracic acid. 12 parts;
Salicylic acid, 4 parts;
Water, 1000 parts.

Dr. Talbot reported a case where, after the opening had been made, there was no immediate flow of pus; but such a flow did occur a day or two after the operation.

Dr. Gradle, in reply, stated that this had happened in a case of his where he had opened into the antrum, supposing a formation of pus there was responsible for a train of neuralgic troubles. He found no pus at the time of the opera-

tion, but in a day or two afterward there was a flow, which he was at first inclined to charge to infection from the instrument used in the operation; but the history of the case convinced him that the disease was the cause of the original trouble, as after the antrum was cleaned out the neuralgic troubles ceased. It is possible sometimes that there may be infection by the instrument or if there be morbid fluid already present, piercing the wall and allowing the entrance of air might cause the formation of pus.

Dr. Taft asked Dr. Gradle what per cent. of diseases of the antrum were caused by diseased teeth.

Dr. Gradle thought between forty and fifty per cent.

Dr. Taft raised the question whether the micro-organisms in the pus from such positions as the antrum and the seat of a whitlow, for instance, where there was no opportunity for the microbes to obtain entrance from without, were the cause of the pus-formation, or whether they were merely an accompaniment, and asked where they came from and how they obtained access to such closed-in positions.

Dr. Gradle thought that the blood was possibly the vehicle which carried the microbes.

Dr. A. E. Baldwin said if this was so, and the blood carried these micro-organisms, there was certainly no safety in any measures which we could devise to keep them out of the system.

Dr. Clifford thought it better to pay more attention to systemic treatment in diseases of the antrum rather than to depend altogether on local treatment. The cause must in many cases be systemic, and we cannot reasonably expect to effect a permanent cure unless we remove the cause. He had had cases which he relieved without opening into the antrum or establishing any drainage, by paying attention to remedial measures applied to the system at large.

SOME FACTS RELATIVE TO DISEASES OF THE TEETH AND JAWS IN INEBRIETY.

Read in the Section of Oral and Dental Surgery, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY T. D. CROTHERS, M.D.,
OF HARTFORD, CONN.

Seen from the clinical and neurological standpoint, a large proportion of the hereditary cases of inebriety have defects and degenerations of the face, jaws and teeth.

Up to the present time, no studies have indicated any *specific* degeneration that can be traced to alcohol as the sole cause. Nevertheless, the inebriate from heredity or other causes has defects, malformations and retarded growths of various organs of the body that are hints of continued organic degeneration. The inebriety or any associated disease in the parents may appear very prominently in defects of the face, head and jaws. These widely differing variations from the normal symmetries are almost infinite in diversity and degree. The same variations in quality and capacity exist in the brain.

How far the bony structure of the calvaruim is controlled by the brain itself or how far external defects influence the internal development, is not yet clearly understood.

The frequency with which congenital defects of the head and face appear in inebriates suggests a pathological relation, which is fully in accord with other facts, and are also true of other degenerative processes. The complex degenerations from the excessive use of alcohol are always transmitted in some form to the children.

Low vitality and defective cell growth and nutrition appear in the descendants in aggravated forms.

The children of such parents are always noted for physical defects of structure and type, although they may display widely varying degrees of brain power—from genius to idiocy.

Inebriety is often only developmental disease, beginning in embryonic life, and manifest in various degrees of malformations. A child with organic defects at birth is switched on the road to inebriety, insanity and perhaps idiocy. Hairlip, cleft or deformed palate, talipes, rickets and other abnormalities are unmistakable hints.

A child in infancy who has convulsions at dentition, strabismus, and later chorea, epilepsy, asthma, who at puberty suffers from hysteria, arrested growths, stupidity, or abnormal sensitiveness is on the same road with the same destination.

If to this is added malformed maxillaries and palate arches, together with defective teeth, the evidence is complete.

It is an important question, however, how far a deformed palate or defective teeth can be accepted as evidence of neurotic or alcoholic diathesis. If the question is confined to the teeth, some curious facts appear.

It may be said to be an established fact that the teeth of hereditary neurotics vary in shape and structure from those of persons of different heredity. Probably they are not any more marked in many cases than any other organic degenerations. Some of these defects do not appear in organic form or structure, but in the power and quality of force displayed.

The effect of alcohol in excess on the teeth is within the observation of all persons. This may be described in general terms to be that of an irritant, impairing the vitality of the mucous membranes and developing a grade of chronic inflammation that is continuous. The stomach, throat, and mouth all become the seat of degenerative processes, by which the nerves of the teeth are quickly affected. The nutrition of the teeth is impaired and the pulp dies, the gums retract, often leaving a red line of demarkation.

The effect of alcohol on the system is to paralyze and impoverish the nutritive system. Conditions of practical starvation supervene, affecting all growth. Hence, degenerate teeth and gums are the natural outcome.

It is a fact that inebriates, as a rule, suffer from early disease and death of the teeth. A large proportion of cases under my care seek the aid of the dentist early in the treatment. When the teeth are destroyed and replaced by others, carelessness in the quality of food, in mastication, and methods of eating are sources of irritation that farther predispose to the use of spirits. The neurotic diathesis that is seen in the early decay of the teeth will, in many cases develop inebriety, as the result of impoverished brain nutrition.

Irregularity of the teeth is also very prominent in inebriates. Projecting incisors and molars that crowd past each other and various other deformities are common. I have in a few cases noticed what seemed to me a very unusual absorption of the bone where teeth had been withdrawn, leaving great cavities, usually seen only in advanced age. This has appeared to me to be a part of the customary alcoholic degeneration.

Some years ago a very large, broad shouldered, muscular inebriate came under my care. He had a hin, piping voice. Examination revealed a very

high, narrow palate arch, with a projecting lower maxillary. He was an hereditary neurotic from an insane and moderate drinking family. His father had the same high vaulted palate, but a retreating, imperfectly developed lower maxillary. He had two brothers, one a famous tenor singer, with striking astigmatic face, and no doubt had a high palate arch. The second had a high arch with a flat dome and irregular teeth and jaws.

Within a year I have seen two children of this patient, both with deformed palate arches and teeth. They are markedly neurotic and have strongly marked degenerative heredity.

It is a common observation that a thin, high-pitched voice is a possible hint of hereditary degeneration when seen in inebriates, and it is often associated with deformed mouth or maxillaries.

This observation of Dr. Talbot appears to be amply confirmed in my experience. Reasoning from the general history of these cases, I should expect to find many deformed palates and teeth, and other marks of physical defects, such as cranial deformities, facial irregularities, together with ill-shaped hands, feet, arms and legs.

Retarded growths and over-growths, associated with mental defects, are often very prominent.

From a clinical point of view, a deformed palate may be taken as an unmistakable sign of neurotic degeneration, which may or may not develop into a distinct form of disease. If with this are associated bad teeth, a tendency to break out into inebriety doubtless exists, due to nerve and cell starvation, with consequent exhaustion, for which alcohol is a most seductive narcotic. In a large per cent. of inebriates, where a deformed palate is found, it can be taken as a sign of nerve and brain degeneration, and will be accompanied by other physical signs of like import. Further study of these cases will reveal mental defects of reason, conduct, and character.

The inebriate who has this peculiar arch with defective maxillary growths has received from his ancestors a pathological bias which will make a cure difficult.

I shall close this brief note with a quotation from Dr. Clausten's work on the "Neuroses of Development:"

"If the skull in its growth, its size and its shape, its dome and base, is actually dominated by the brain it defends and contains, then the brain growth will in this way secondarily determine the shape of the upper maxillary bone and the palate.

"The brain unquestionably deriving its shape, size, and qualities from ancestry and a bad heredity, determining a bad brain, we see how a bad nervous heredity would naturally determine an abnormal palate. The theory that a high palate may be a "reversion" to a lower animal form or to the form in lower races of mankind seemed to be largely disproved by a careful examination of the palates of most classes of animals and of different races from the Europeans to the extinct Americans, the Australians and the Hottentots, which I made in the Anatomical Museum of Edinburgh University.

Where dolicocephaly and brachiocephaly is a matter of race and not of disease or degeneration, they make no difference in the palate dome.

There is no such thing as a high V-shaped palate in any animal or in any race from the Australian aborigines upward. In one way only can the V-shaped palate be connected with a reversion to the animal type. Apart from prognathism, the sides of the palate, that is, the lines of the bicuspid and molar teeth on each side tend to run parallel to each other.

Now, supposing the lines of the teeth in man during development were approximated and made parallel by a formative reversionary process, the palate would be pushed up in the center,—the line of the least resistance—into the nasal cavity.

Those palates where the deformity consisted in a ridge down the center antero-posteriorly, seem to show that in them the deformity took place at a later period than in the other deformed palates when the nasal septum was getting stronger and kept the center of the palate down, while on each side of it the palate was drawn up making two palate vaults instead of one.

The theory that the shape of the palate is dependent on the nasal cavity of which it is the floor seems to me without any valid foundation whatever.

The upper maxillary bone is related to three functions, viz.: alimentation, smell, and facial expression.

There is no proof that either smell or mastication is interfered with by a high dome, but unquestionably facial expression is greatly influenced by any change in its form, and facial expression is naturally related directly to the development of the mental part of the brain and is dependent on it. Speech I found, is affected slightly by the shape of the palate.

The theory that deformed palates are due to thumb-sucking in infancy is utterly baseless. Idiots notoriously don't suck well.

Prognathous jaws certainly seem to be a reversion to an animal and lower human type, but they do not necessarily imply a high palate.

Virchow's theory of premature or irregular ossification of the skull sutures,—though it may explain some few cases of idiocy—does not seem to me to explain the high palate any more than I think it explains the dolicocephalic or brachiocephalic types of head or the types of cerebral sulci.

The deformity of the palate occurs during brain growth, early in life, probably in utero.

We must refer the high palate to a bad initial neurotic heredity, just as we refer a bad type of face or irregular teeth or an asymmetrical head to such heredity.

Mere accidental changes in the head shape are quite consistent with good brain development. The brain in its growth, if artificially confined in one direction will expand in another, and not suffer in function thereby.

The savages who make their children's heads square by pressure do not alter the mental or motor functions of the brain thereby,

The vaulted palates and altered dental arch must be taken with other changes in the head and especially in the face expression. As one of the morphological indications that show a tendency in the person to whom it belongs and in his family to developmental neurotic diseases—notably idiocy, congenital imbecility, stuntedness of growth, deformity, epilepsy, adolescent insanity, and that organic lawlessness and lack of mental inhibition or weakness of mind that distinguish the criminal classes. It is thereby one of the marks of a family that is tending toward mental death and extinction.

As regards the exact mode in which the palate deformity arises, I cannot find any help in a study of the mode of ossification of the upper maxillary bone, except in the cases where deformity consists in a depression or two depressions where the four centres of ossification meet. If the anterior lobes of the brain, —and that is the part of the brain that lies above the palate—become contracted through hereditary brain deficiency, and the skull base in front is therefore narrowed while the jaw must remain large enough to hold a normal number of teeth, it might naturally assume more the shape of the bow of a boat than a horse-shoe.

The alveoli of the bicuspids and molars on each side being drawn together by the narrow skull-base from which they hang and this process would throw up and deform the palate.

Clayshaw's measurements of the skull-base and pterygoid arch give much support to this hypothesis.

In congenital mental defect it is the anterior lobes that are found chiefly deficient, and in the microcephalic and Kalmuck class of idiots—where the brain has undergone most developmental lessening, the palate is found to be highest and most deformed.

Taking all the facts into account, it seems proved that the condition of the palate may be a most important index of brain development and of liability to developmental neurosis.

My second class of neurotic palates is apt to go with a nervous temperament—often with a neurotic diathesis; often with high mental qualities, but not all-roundness of capacity; often with keen sensitiveness or supersensitiveness of bodily feeling or emotion, and frequently with liability to the lesser functional neuroses—such as hysteria, neuralgia, migranes, headaches, etc.

It seemed to me that the consumptives are more apt to have neurotic and, many of them, deformed palates, than the sound in body.

I did not find any connection, hereditarily or otherwise, between my "deformed" palate and cleft palate.

They seem in a way to represent formative tendencies "in utero" in opposite directions.

In the case of the ossifying centres in cleft palates they had not been able to meet in the center and close in the floor of the nares, through perhaps excessive width of skull base; while in the latter, as we have seen, there was a greater width of palate bone than was needed to stretch across, and so it had to rise up in the center and form an acute angle or high arch.

Discussion.

Dr. J. Taft said the most remarkable effects noted in the paper were on the shape of the jaw and mouth due to hereditary transmission. These effects were important and undeniable, but the question arose in his mind whether the inebriate suffered any change in the conformation of these parts induced by the habit of drinking.

Dr. Crothers said there were very marked changes, but chiefly those resembling the changes usually brought about in the process of aging.

Dr. Barrett said he understood the essayist to refer to the V-shaped vault as a reversion to the animal type. He thought this was a mistake, as the high or V-shaped vault is not found among animals. It, however, might be true in regard to the V-shaped arch, as this, or rather the saddle-shaped arch, is common in animals, more especially those nearest correlated to man.

Dr. E. S. Talbot:—I am much interested in the paper of Dr. Crothers, especially as the author's long connection with an inebriate asylum gives him peculiar advantages for observing these conditions. I will have to take issue, however, with his statements that these peculiarities of the mouth and jaws extend back to uterine life. Every observing dentist knows better than that. The author being a medical man, has not the opportunity for observing the mouths of all classes which we of the dental profession have. We know that this condition is never found during the existence of the first set of teeth. The deformity begins in the sixth or seventh year.

For several years I have been making a study of these peculiarities in the mouths of idiots, mutes, inebriates and criminals. In that time I have examined about seven hundred and fifty mouths of inebriates, and have found a larger percentage of badly formed mouths than among any criminal, idiot, or other defective class; but the defects are not so marked. There are fewer absolutely V-shaped arches among inebriates, but more of what might be called partial V-shaped arches; but I find plenty of V-shaped arches among criminals, idiots, the deaf and the blind. Now another singular thing: there are twice as many high vaults among inebriates as among any other class of degenerates. This proves that the inebriate is born; that it is impossible for him to live a straight, ordinary life. One born with the qualities that this formation indicates will become either an extreme egotist, a genius in business or some other direction, or he will be deaf and dumb, idiotic, blind, or an inebriate. I will show this in a paper I am to read before the Neurological Section, and will show that the inebriate is diseased.

If we examine a skull, we find quite a space between the hard palate and the brain. If the brain is arrested in its development, the osseous system will likewise be undeveloped, but the arrest of development in the osseous system will be caused by the want of development in the brain. I may say, however, that the lower jaw is developed independently of the rest of the face.

Dr. Fletcher asked whether the fact that both the teeth and the brain were developed from the epiblast had any bearing upon the defective teeth in the classes spoken of?

Dr. Talbot thought that as the arrest of development was from causes back of the birth of the child, it was reasonable to suppose that there was a defect in the tissue from which the organs originated.

CLINICAL LECTURE ON THE TREATMENT OF DIFFERENT FORMS OF BRIGHT'S DISEASE OF THE KIDNEYS.

Delivered at the Pennsylvania Hospital, Philadelphia, November 19, 1892.

BY J. M. DA COSTA, M.D., LL.D.
OF PHILADELPHIA, PA.

Gentlemen:—I shall this morning bring before you a series of cases of Bright's disease, illustrating several varieties of this affection. After discussing their clinical features and diagnosis, I shall make some remarks upon treatment. It happens that the wards are now rich in cases of kidney disease; so that I am enabled to group for you cases suffering with different types of the disorder.

Case I is a boy 16 years old, who was before you two weeks ago. I pointed out to you at that time the striking phenomena. I told you that he had the characteristic look of the affection. He was pale; his face was œdematous, as were his limbs; his mind was dull, and examination of his urine revealed the cause to be chronic parenchymatous nephritis. Not to repeat at length what we then discussed, I will merely speak of the treatment. I said that we should treat the case with the lactate of strontium, a remedy which is new in the treatment of these Bright's affections, and which, both last year and this, I have been testing clinically. Now here is a case returned after two weeks, and we may ask ourselves if this plan of treatment has been followed by any striking results; in fact, by any result that would make it worth while to continue the remedy. We observe that his general condition has improved; he looks

brighter, but there is still pallor and puffiness of the face. He passes from forty-two to sixty ounces of urine daily, and last week it ranged from sixty to ninety ounces. Nevertheless, the proportion of albumen remains high. The precipitate upon boiling the urine in a test tube is from sixty to seventy per cent. in bulk; and this proportion was found in the urine during the preceding week, even when he was passing such a large quantity. We further observe that his tongue is slightly coated; the bowels are daily moved; his appetite is good. His diet consists of milk, oysters, fish, vegetables, bread, and some tea and coffee. He has not been allowed to eat meat. He has been taking milk six ounces every two hours, and the other articles of food at meal times, so that milk forms the greater part of his nourishment; as his appetite is good, he gets quite enough in the way of food. You probably wish to be told what has been the result of the remedy in this case. The strontium has acted the part of a powerful diuretic; the urine at one time, as you observe by this chart, went up to ninety ounces. Nevertheless, the amount of albumen has not been decreased. His general health is fair; at all events it is not apparently suffering much at present.

The pathology of this case has been already referred to; it is recognized as one of parenchymatous nephritis. There is now very little dropsical swelling remaining. Under these circumstances, should we consider that he has had enough of the remedy? Or what conclusion can we form in reference to it? First, let me call your attention to the fact that the dose was even increased from thirty to forty grains, three times a day (or two drachms daily). I do not believe it proper to increase this dose or even to continue the remedy. I think, after two weeks trial, that we may conclude that this agent will not produce any specific effect upon the albuminuria. This is not my first experience of the kind with the strontium salts: I tried them last year, when they were first brought forward, and I may state that I had very much the same results last winter as we have had in this case. The effects of the lactate of strontium have been carefully studied in these cases. It is an admirable diuretic it is true, but as far as any specific effect upon the kidney or upon the excretion of albumen is concerned I cannot say that we have yet obtained any decided results. I therefore conclude that it is in cases of Bright's disease with scanty secretion that it is most applicable, since it will increase the amount of the urine passed without causing any irritation of the kidneys; but as for diminishing the amount of albumen, I do not think it will maintain the reputation it had at first, or accomplish what was then claimed for it; for you are aware that the French clinicians who introduced it did not do so because it possessed diuretic properties, but on account of its alleged effect in diminishing the amount of albumen. You have already heard that albumen still exists in large proportion in this boy's urine, associated with epithelial casts, that are largely granular. I will now give him some other remedy that I hope may prove more useful in diminishing the albumen. I will here try a remedy that I have found of benefit in similar cases; it is nitro-glycerine. We will begin with two drops of the one per cent. solution in alcohol, and gradually increase it as high as ten drops, given three times each day, carefully observing the effects. In one case, I went above this as high as thirty drops three times a day; but I think that for the most part it is better to confine ourselves to smaller doses, say not over ten drops of the centesimal alcoholic solution. Its best results are shown in reducing the excretion of the albumen, thus diminishing the amount of drain from the blood of this important constituent. The diet of the patient will remain the same.

Case II is a man 65 years of age (carried in on a bed). Now, gentlemen, here is a case with which I am not so familiar; barring a short conversation with him yesterday, I see him now for the first time. The resident physician tells me that this patient has been in the hospital once before for the same malady, so that we may learn something of the early history of the illness. This also is a case of Bright's disease of the kidneys. His present attack began three weeks ago, or it may be more correct to say that he grew worse three weeks ago, for the doctor says that he was in this hospital from May until last June, and then went out better but not cured. He was dropsical upon admission on the former occasion, and his urine was scanty, eighteen to twenty ounces a day; it contained small quantities of albumen with granular casts. In his previous history I find a note of eye-changes; whitish, glistening spots seen in the right eye, and similar spots, but less marked, in the left eye—in other words the characteristic retinal changes of Bright's disease. Under treatment in the hospital, with digitalis, elaterium, followed by Basham's mixture, his dropsy disappeared. He was so much better that he considered himself cured and left the hospital; but he was not well. This was his previous history; now we come to his present illness. Three weeks ago he became worse; he complained of pains in the lumbar region, and of some dizziness, but had no dropsy at this time. He came back to be treated for his pain in the lumbar region and for vertigo. The dropsy has not reappeared. The urine has been examined since his readmission two days ago. On the 17th it was 1020, clear, of alkaline reaction, and amounted to fifty-four ounces; yesterday (the 18th) it was thirty ounces. The proportion of coagulum after boiling in the test tube was two per cent. The small white sedimentary deposit consisted principally of phosphates; no casts were found.

His tongue is clean; the bowels are moved daily. His pulse is distinctly rigid, showing increased arterial tension, and his temporal arteries are prominent and throbbing. The heart has a sharply accentuated, second sound; the apex impulse is, however, to be felt within and under the left nipple. Notwithstanding this extraordinary accentuation of the second sound, and the forcible impulse which may be felt all over the cardiac region, I do not find any evidence of decided cardiac disease. There is no enlargement of the liver, nor of the spleen, and no œdema of the chest or extremities. Now, what is the matter with this man? This case is entirely different from the one you saw before. This patient has a cirrhotic or contracted kidney. The condition is readily recognized by three signs. In the first place, the absence of dropsy, or only its occasional appearance, and even that I infer from his history rather than from anything that we see at present. Secondly, the retinal changes found upon ophthalmoscopic examination. Thirdly, the signs of

increase of arterial tension shown in the pulse and the very markedly accentuated second cardiac sound. Finally, the urine record is most significant. The two per cent. of coagulated albumen we have here, is in marked contrast with the sixty to seventy per cent. in the other case. In that patient we had parenchymatous nephritis, in this cirrhotic kidney; in the former there was enlargement and in the latter contraction of these organs. This is the form which has been called chronic, interstitial nephritis. The urine usually has the specific gravity of 1005 to 1015; here it is a little higher, but this does not impair the general features of the case. Let me direct your attention to one more point. You recall the fact that casts were so frequently found in the other case that every examination showed them in profusion; here they are rare. Yesterday the resident examined four slides without meeting with a single cast. But this is not altogether a typical case. Is there anything lacking? Yes, the heart condition. When you have a case lasting as long as this, it is common to have more than mere increase of arterial tension, and accentuated second sound and marked impulse. It is common to find cardiac hypertrophy, and its absence here will give us a point of prognosis. On account of the absence of this lesion in the heart, the patient is very likely to have a longer life before him, and better health than if this change had taken place. Except for the accidental occurrence of uræmia or uræmic convulsions, the cases of interstitial nephritis which do best in the long run are just these cases that are free from cardiac lesion.

As regards treatment, it is very important to keep the bowels in a soluble condition. The cardiac overaction and the condition of the blood-vessels make it incumbent upon us to administer laxatives. Rochelle salts, repeated several times a week, may be given. We will avoid a routine treatment such as the administration of infusion of digitalis, because while it would affect favorably the dropsy, where it exists, it would aggravate the arterial tension. If we increase the heart's action, we run the risk of rupturing the vessels and bringing on an attack of apoplexy. What class of remedies would then be likely to do good in this case? I should not consider that the treatment by nitro-glycerine, given to the preceding case, would be of any value here, simply because the amount of albumen is extremely small, as it usually is in contracted kidney, though the nitro-glycerine would be of service for the arterial tension. If we could find some remedy which would reduce the amount of fibrous tissue forming in the kidney it would strike at the root of the malady. Corrosive sublimate is such a remedy, and I will therefore give this patient bichloride of mercury in increasing doses. I have tried iodide of potassium, but found it of certain efficacy; in some cases I have seen increased irritation and injury of the kidney following its administration. I believe that the bichloride is a safer remedy, and will commence with a dose of one-thirtieth of a grain three times a day, increasing it gradually to one-eighth of a grain.

Now, gentlemen, at the same time that we give the bichloride for the condition of the kidneys, we must pay some attention to securing the free action of these organs. The patient is now passing hardly urine enough, only thirty ounces a day. I will, temporarily at least, give him cream of tartar in the form of lemonade (made by dissolving the cream of tartar in sweetened water, half an ounce or more to the pint), which he shall take daily until the secretion is freer. As a rule, you will not have much difficulty in keeping up the secretion in instances of contracted kidney; indeed, it is apt to be a little more than normal. He may also drink some mild diuretic mineral water, such as Poland water.

The diet is a very important part of the treatment of a case of Bright's disease. This patient has been put upon a milk diet almost exclusively. Is it essential that a patient with contracted kidney should be exclusively upon a milk diet? I answer, No. It is a nourishing, bland diet, and has diuretic properties, but in cases of contracted kidney where there is so little albumen as there is here, I give milk mainly, but I also allow toast, the yolks of eggs, and other light articles of food, such as oysters, fish and poultry. While keeping to milk diet as the main line of treatment, I do not make the patient's life miserable by insisting strictly upon milk as the sole article of diet.

We will watch the progress of these cases; one having a large amount of albumen, casts and dropsy, a case of parenchymatous nephritis; the other with a small amount of albumen, no casts, no dropsy, a case of interstitial nephritis, and the latter on a different plan of treatment from the former.

Case III.—Here, gentlemen, is yet another case of Bright's disease of still different character. It is fortunate that the rich material now in the wards will enable me to exhibit to you the principal forms of this protean malady in a series of cases, and to point out the different indications for treatment in each and the best course to pursue in the general management to secure the most benefit to the patient.

This man is about 70 years of age, of spare frame and at present confined to bed. He had a brother, he says, who died with dropsy. He himself, prior to his present attack, has been a well man, or at least in his ordinary health, as he is a chronic sufferer from hæmorrhoids, to which he attributes all his illness. We get the following history from the physician who attended him outside of the hospital: during last winter he had an attack of what was considered acute nephritis, from which he entirely recovered. He then was well as ever until six weeks ago, when he began to complain of shortness of breath, weakness, and swelling of his legs.

As you see his legs are œdematous; they pit upon pressure, although since he has been in the hospital, the enforced rest in bed has done him much good, and the swelling is less marked than when he came in. There is no abdominal dropsy; no disease of the heart can be detected upon auscultation of the chest. There is feeble respiration with slight relative dulness at the back of the lungs especially upon the left side, where I can hear some moist râles. His tongue is clean except towards the back, where it is slightly coated. The bowels are costive. The urine has a specific gravity of 1022, and it is acid this morning, but was not so yesterday. It contains albumen and a sediment composed of abundant epithelial casts and urates, but no blood.

Now what is the matter with this man? He is suffering from an attack of acute or subacute nephritis. The fact that he was in his usual health—for his ill-health before was his usual condition and due to hæmorrhoids which seem to have embittered his existence—it is fair to say, I think, that he was in

his usual health, when he suddenly became short of breath and dropsical with albumen in the urine, and casts. The only question is, Is the present attack one which can be traced back to the seizure which we learn from the physician who attended him he had last year, or is it a distinct attack? It is difficult to say, as we know nothing at all about the condition of the urine in the meantime, since he passed from medical observation until he applied here for treatment. If you ask my opinion as to the probabilities of the case I would say, that there has been since the former attack a slight amount of latent kidney disorder, and that the present is really a subacute attack of nephritis. If this were entirely an acute attack, we should have more albumen and perhaps some blood in the urine.

What is to be done for the patient in the way of treatment? We must first relieve the present condition of dropsy. His shortness of breath is due to dropsy of the lungs or serous effusion into the pulmonary areolar tissue. There is pulmonary congestion with effusion. There is no disease of the heart and we must look to the kidneys for the cause of the disorder. On account of the coated tongue, costiveness and congested internal organs, laxatives are indicated here as in the preceding case. Let him have half an ounce of bitartrate of potash every other day, and if it does not produce results, give it every day. Let him have diuretic mineral waters freely; He shall have infusion of digitalis, half an ounce every four hours, its effects being watched. We will dry-cup his lungs to relieve the pulmonary congestion, and he shall also have a few dry cups over each kidney. After the irritation from this has subsided, croton oil or tincture of iodine may be applied over the kidneys in the lumbar region. As this is an acute, or at least a subacute attack, we will put him upon a milk diet. He may have some toast with his milk because it will make his diet less monotonous; but the more strictly he keeps to the milk diet the better.

We have here indicated a different line of treatment from that of the two other cases—milk diet, diuretics, digitalis and laxatives. Under these precautions the acute condition will pass away and then we will be able to decide whether there was anything left from the preceding attack, or whether this was an entirely new seizure.

I have been enabled this morning to place before you, in these three patients, three different forms of Bright's disease of the kidneys, and to show you how they differed in their clinical characters, how they required different forms of treatment, and also how they differed in their prognosis and ultimate consequences.

[The treatment in Case III was followed by the happiest results. When he was shown to the class a week later, the albumen was reduced to a mere trace and all the dropsy had gone. In the first case shown, scanty urine coming on and symptoms of mild uræmia, the nitro-glycerine in a few days had to be discontinued, and pilocarpine, laxatives, caffeine and benzoate of sodium were substituted, under which he rapidly improved.—*Rep.*]

To Deodorize Iodoform. (*Pharm. Zeitung*): ℞.—Iodoformi, 97 parts; acid carbolici, 1 part; essent. menth. pip., 2 parts.

RICKETS, AND THE TREATMENT OF ITS RESULTING DEFORMITIES.

BY WM. E. WIRT, A.M., M.D., Ph.D.,
PROFESSOR OF ORTHOPAEDIC SURGERY, WOOSTER UNIVERSITY, CLEVELAND, OHIO.

In the consideration of a medical topic we must recognize its importance as depending on: first, the frequency with which the disease occurs, and secondly, the severity of the disease if left untreated. Taking this as our standard of test we must recognize in rickets a disease of considerable importance.

Frequency.—In Europe the disease is very common, especially is this so in England, and to such an extent that in some countries it is known as the "English disease." The proportion of all children, attending certain clinics, having rickets is given as follows: Dresden, 25 per cent.; Berlin, 11 per cent., Paragüe, 31 per cent. In the higher classes the proportion is much smaller.

Merei states that in Manchester one in five children of well-to-do families had rickets, and the proportion is about that great in the wealthier classes.

Its severity when left untreated varies considerably. In the milder cases the lesions are insignificant, and the ultimate damage done is of little importance. But in the severer cases the results are quite different; the changes in the spinal column and extremities modify seriously the contour of the body, and may even prevent locomotion; the changes in the thorax interfere seriously with the function of vital organs; the changes in the bones of the skull may even endanger the life of the child; while the deformities produced in the pelvis are a menace to future generations.

Climate.—It is stated by various observers that it is a disease more especially of northern climates, it being particularly common in Germany, Denmark, Sweden and England. But my own observations lead me to think that it is more common among the Italians and negroes than any other class of people. In the city of Cleveland the disease is quite common among the former, and I recently had a death among them from this cause.

Occurrence.—Rickets is mostly a disease of early childhood though it is observed at other periods of life. Enough cases of fœtal rickets have been observed and recorded to establish its possibility. At the age of puberty changes may take place in the bones which are recognized as due to rickets. In girls at this age the preparation for the catamenial flow causes disturbances of nutrition, and if to this we add a sedentary life we have conditions favoring this disease. Vincent, of Lyons, considers the scoliosis of adolesence as late vertebral rickets.

A form known as senile rickets has been described, but the condition thus found is probably the same as that known as ossium mollities. But by far the greater proportion of cases are seen in children between the ages of six months and two years.

Pathological anatomy.—The pathological changes noted in rickets are mostly to be found in the ends of bone, in the cartilage and in the periosteum. Chemically, there is a change in the proportion of the organic to inorganic material, in the normal bone the organic matter constitutes about one-third of the bone. In rickets the organic material may compose as much as four-fifths of the bone.

Histologically there are many changes, the most

marked of which is seen in the cartilage between the epiphesis and diaphesis. This cartilage normally contains a zone of proliferation, consisting of one or two layers of cells, while in rickets it is composed of many layers of cells involving nearly the whole intervening cartilage. The cells are much enlarged and the matrix is diminished. Therefore, the proliferating zone is much increased in size, is soft, and of a grayish translucent appearance. This increase of the proliferating zone accounts for the epiphiseal enlargements. The process of ossification is arrested. The Haversian canals extend from the bone into the proliferating zone by a process of absorption and appropriation. Attempts at ossification are shown by granules of lime being scattered through the cartilage, and here and there are found nodules of true bone. Increase in thickness of bone occurs from the under layer of the periosteum. In rickets this *subperiosteal* layer is increased in vascularity, and in appearance much resembles spleen pulp, so that the older observers mistook this condition for a sub-periosteal hæmorrhage. The bones affected are the skull, jaw, teeth, spine, extremities and pelvis.

The effects on the skull are a direct sequence of the non-ossification of the bones. The sutures and fontanelles remain open much longer than they should and resulting from this are changes in the shape of the head. The diameters are changed, the head being lengthened and flattened latterly. The contour of the head is rectangular with prominent frontal and parietal eminences. The forehad is prominent, and in some cases even to the extent of overhanging. Authorities differ as to the relative size of the head, some claiming that it is larger, and some that it is smaller than normal. The London Pathological Society reported in the *Lancet* of 1880 that in seventeen children of average age of 4.72 years the average circumference was 21.22 inches, while in an equal number of non-rachitic children with average age of 6.05 years the average circumference was 19.95 inches.

On the other hand Ritter von Rittershein, on the ground of careful comparative measurements, denies that there is any enlargement. As for my own opinion, my experience would lead me to think that the head is enlarged in rickets. I have measured few rachitic children whose heads measured less than 20 inches, while the vast majority measure more than this.

In regard to the effect of this disease on cerebral development as apart from the size of the head, Trusseau held that cerebral development was favored, while Gee maintained that there was retarded cerebral growth. My opinion inclines toward the former view the vast majority of rachitic children certainly seem above the average in intelligence.

A condition of the skull known as craniotabes, which consists of a softening and thinning of the bones, was until recently considered to belong particularly to rickets; but syphilographers claim to find this condition more or less common in syphilis. One argument advanced by Goodhart in favor of its common connection with rickets is that craniotabes is almost invariably associated with laryngismus stridulus; again laryngismus stridulus is universally admitted to be almost always due to rickets; so that if the two are thus closely associated, the evidence is clearly in favor of the rachitic nature of craniotabes.

The thinning of the skull in craniotabes is due to the pressure of an external object, as the pillow, from without, and the pressure of the brain within. It is usually found on the posterior aspect of the skull, due to the child lying more commonly on that part. On pressure of the hand the impression conveyed is likened to that of parchment paper.

Other parts of the head affected are the jaws and teeth. The whole face is smaller than normal, and this is particularly seen in the lower jaw which is shortened and becomes polygonal in shape. Fleishman claims that the upper jaw is lengthened.

The process of dentition suffers severely. The incisors may not appear until ten months or later, and when they do appear they are deficient in enamel and crumble readily. Delayed dentition is of great diagnostic importance.

In the trunk we find various changes. The ribs are early affected, and changes take place in the contour of the thorax. The so-called "rachitic rosary" consists of a beading or enlargement of the ribs at their anterior ends where they unite with the costal cartilages, and it is a most characteristic symptom of the disease. The atmospheric pressure combined with muscular force acting on the softened ribs causes a change in the contour of the thorax. The most common deformity is a flattening in the sides and a pushing forward of the sternum producing the condition known as pigeon breast. Sometimes the reverse takes place, and the sternum is sunken in instead of protruding and forms what has been called the bird-nest breast. In severe cases these changes in the chest interfere seriously with the action of the heart and lungs. Changes in the arteries may and do result from these abnormalities in the shape of the chest.

In marked cases the abdomen becomes quite protuberant. The spine very commonly suffers from the disease, the bones being softened and the ligaments weakened, and following this condition we have kyphosis or lordosis, the former being the more frequent.

In its effects on the bones of the pelvis of woman rickets verily threatens man's posterity, and on this account the rachitic pelvic deformities are considered the most serious to which the skeleton is subjected. They are produced by the downward pressure of pelvic organs which tend to flare out the brim; by the pressure of the trunk, transmitted through the spinal column, which, acting on the sacrum presses forwards its promontory, thus shortening the anteroposterior diameter; by the action of the heads of the femori in standing and the pushing in of the tuber ischii in sitting, both acting to narrow the outlet of the pelvis. Serious consequences may follow from the marriage of a woman who had rickets of any severity.

The deformities of the skeleton the most apparent are those of the extremities, the most marked of which are found in the lower extremities. In the upper extremity we find the humerus usually bent only slightly with the convexity outward, the point of greatest curve being at the insertion of the deltoid; the radius and ulna are bent with convexity outward. Sometimes the bend is quite marked just posterior to the wrist, and is thought to be due to creeping. The natural curves of the clavical are increased, and frequently the scapula is found slightly warped with its edges thickened. In the

lower extremities we find the femur bent with convexity outward; the most common curve for the tibia and fibula is the simple outward curve recognized as bow-legs. In severe cases the lower limbs are so twisted as to have received the name of grape-vine legs. In these cases the femori at the upper portion are bent outward, at the lower portion they are bent inward forming a marked knock-knee: the tibiæ are bent outward forming a marked bow-leg or frequently in the severer cases they are bent backwards, that is, with the convexity forwards. In a few rare cases the tibiæ are flattened just below the knee with a marked convexity posteriorly.

Etiology.—The cause of rickets may be summed up in the word malnutrition, and may occur as Vincent has said: "In the very bosom of abundance"; but it is seen in its severe types among the children of the poor in large cities. There seems to be an inherited predisposition to the disease. Defective assimilation and enfeebled digestion which have a causative relation, can often be traced to diseased and cachectic conditions of the parents. The relation of syphilis to rickets has long been a mooted question. Certain it is that the impaired nutrition accompanying inherited syphilis must necessarily predispose to rickets. But the claim of M. Parrot that rickets is a manifestation of infantile syphilis is not borne out by the history and indisputable facts in many cases. Again, as against the syphilitic origin of rickets someone (whom, I cannot recall) has attracted attention to the fact that syphilis shows itself most markedly on the first children born in a family, while rickets manifests itself most markedly in the last child or children born.

Hygiene is recognized as of great importance in this disease, and Fournier considers the principles of hygiene as the most important factor in its cure. As for myself, I have been able to trace the cause of rickets in more cases to improper feeding than to anything else. It is the common answer to inquiry in this regard as to what the child has ben fed: "Oh, the child has been eating just what the rest of the family eat," and this is said of a child a few months old.

Hand-fed infants are extremely liable to the disease, and especially is this so when fed starchy food. It has been said that rickets could be produced in an animal by feeding lactic acid, at the same time restricting the amount of calcareous matter, but it would seem that the want of calcareous matter in the food was the more important element, and not so much is made of this point as formerly.

A form of this disease, which has not received much attention, is called by Eugene Vincent "local inflammatory rickets." He describes it as produced at one end of a long bone by inflammation at the other end. I have seen a few cases that might be classed under this head.

Symptoms.—The symptoms of rickets have many of them been described under the head of pathological anatomy. The disease so often follows a spell of sickness that it is difficult to say when the disease began. It will be noticed that the child is peevish and cross; it is restless at night with a tendency to kick off the bed clothes; there is often flatulence with pasty stool. A symptom often observable is tenderness of the whole body. The child seems to dread to be handled. The healthy child delights in exercise and loves to be dangled in the air; the rickety child dreads exercise and seems most contented when left alone; the rickety child perspires freely, both when asleep and awake, especially is this so about the head. Later on the bone changes take place. The ribs are beaded; the chest changes its shape; the fontanelles remain open much longer than normal; the contour of the head is changed; craniotabes is noticed; dentition is delayed, the epiphises of the extremities are enlarged; the limbs are deformed; walking is delayed, the child assumes peculiar attitudes—the spine sometimes in kyphosis, somtimes lordosed, if able to stand the limbs are spread apart. To these symptoms may be added the symptoms of broncho-pneumonia. With this array of symptoms the diagnosis becomes easy.

Prognosis.—The prognosis of rickets as to life is very good. Only a few of the more severe cases die. I recently had a very severe case of rickets in a child of fifteen months, that died of broncho-pneumonia complicated by diarrhœal troubles. This child had never walked, its limbs being very soft and pliable, and accompanying this were all the marked signs of rickets. In the mild cases the diagnosis is often not made out and yet the child entirely recovers. In the moderately severe cases the bones soften and become deformed, then arrest of the disease takes place, and the bones harden in the deformed position. Children so affected never reach full size and they always bear marks of the disease. It is only in the mild cases that the child outgrows the deformity, so that it is a serious mistake to let these children go untreated, often at the recommendation of the physician, being assured that the child will grow straight. At this stage they only require mild treatment for the deformity, and this mild treatment they should have.

The complicating diseases which these children are liable to are those of the respiratory tract, and these diseases they bear badly especially if the chest is much deformed. Bronchial catarrh and broncho-pneumonia are especially to be feared. Whooping-cough is badly borne, and measles if attended by bronchitis or broncho-pneumonia is a dangerous complication.

Treatment.—The treatment of rickets is clearly indicated by the pathology and etiology. Healthy nutrition must be restored. The child of a sick mother with milk of poor quality and small of quantity must have additional food; if two years old it should be weaned. Naturally the diet of a rickety child must vary with its age. The following diet is given by Erastus Smith, and for the average case can not be much improved: breakfast, a cupful of milk with a teaspoonful of Mellins' food dissolved therein; at 11 A.M., a cupful of milk containing fifteen drops of saccharated solution of lime; dinner at 2 P.M., a tablespoonful of pounded mutton chops with stale bread and gravy; or, a tablespoonful of the flower of broccoli, well stewed with gravy, bread and butter, and toast water. Supper at 6. P.M., same as breakfast, or a soft boiled yolk of egg provided no meat has been eaten. If the child is a year old or younger and is hand fed the milk should be diluted with lime water or barley water. The proportion is two parts of milk to one of water, or in some cases it may be reduced to equal parts of milk and barley water.

Of nearly equal importance with the food is the hygienic measures. Strict cleanliness must be ob-

served in connection with the feeding apparatus and the food. Every day the child should receive a tepid bath; cleanliness must be observed in dressing the child, there being no stint in the changes of its linen and napkins. It should be dressed warmly but not bundled up. The child should be kept in a warm and light room with plenty of ventilation; in pleasant weather the child should be kept out doors as much as possible.

Among the therapeutic measures cod liver oil, iron and the hypophoshhites rank high. Phosphorous is highly spoken of by many. Jacobi, of New York, gives the official oleum phosphoratem ($\frac{3}{200}$ gr.) Ledeschi makes applications of galvanism to the spine and claims better results than with phosphorous alone.

Treatment of Deformities.—The treatment of the deformities resulting from rickets falls within the province of the orthopedic surgeon. For the milder cases mild treatment only is required, the simplest of which is the building up of the sole of the shoe. For bow-legs the shoe is built up from one-eighth to three-eighths of an inch on the outside of the shoe; for a knock-knee the shoe is built up on the inside. Before beginning the treatment a tracing is taken of the deformity and after wearing the built up shoes for several weeks the tracing is again taken. If improvement is noted the treatment is continued to a perfect cure. If the deformity is increasing, or after eight weeks there is no improvement, this form of treatment is abandoned and braces are used. Of course, the above method is only indicated in the milder cases. For the severer cases braces are indicated in the start. The idea to be carried out in these braces in rickety deformities is three point pressure—two on concave side of the limb and one on convex side and at the point of greatest convexity. To have these pressure points always at the same place the brace must be carried down to a foot plate, or up to a pelvic band; the former is usually the simpler method. Pressure is obtained at the point of greatest convexity by means of a lacing. If by the use of braces correction of the deformity is not obtained there remains osteo-clasis and osteotomy. Since the days of antiseptic surgery osteotomy has been found to be a perfectly safe procedure and on account of its precision is preferred by most operators. By means of a small osteotome the bone is easily broken, the deformity corrected, the parts dressed antiseptically and the limb fixed in plaster of paris. At the end of four or five weeks the plaster is removed and the union is found firm.

As a safeguard braces are sometimes worn for several weeks or perhaps a month or two after removing the plaster.

In the lower extremities we find the femur bent with convexity outward; the most common curve for the tibia and fibula is the simple outward curve recognized as bow-legs. In severe cases the lower limbs are so twisted as to have received the name of grapevine legs. In these cases the femori at the upper portion are bent outward, at the lower portion they are bent inward forming a marked knock-knee: the tibiæ are bent, etc.

To remove nitrate of silver stains from the fingers, paint the blackened parts with tincture of iodine; by applying ammonia, the iodine will be bleached, leaving white instead of black stains.

THE REMOVAL OF THE TOOTH PULP BY THE USE OF COCAINE.

Read in the Section of Oral and Dental Surgery, at the Forty-third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY EDWARD C. BRIGGS, M.D.,
OF BOSTON, MASS.

In October, 1890, I read a paper on this subject before a society in Boston and recounted many succeseful operations done since the preceding May. Since then I and some of my neighboring associates have been so successful that I feel constrained to bring the matter before this Association for a wider field in which to sow such good seed. In almost all cases of exposed pulps the pulp can be paralyzed and removed with no pain or discomfort to the patient. Cases which would seem most antagonistic to any radical treatment yield most gracefully to this.

Pulps of known irritability which would resist arsenious acid are satisfactorily disposed of by this method. Teeth are not "devitalized" by this treatment, as is so often the case with strong caustics, but are simply made "pulpless"—retaining their color and vital connection with the jaw.

The immediate root filling which is a part of the operation seals the tooth before germs can get in, and there is no abscess to be feared.

To operate it is necessary to have, 1. a tightly packed, smoothly running hypodermic syringe, with a flexible, blunt point. This latter condition I obtain by putting the point of a Dunn syringe into a hypodermic syringe.

2. A *freshly* prepared 20 per cent. solution of hydrochlorate of cocaine. (I have not yet had the opportunity to experiment with so-called milk of cocaine, which is suggested as being better.) Having an exposure of the pulp (the smaller the better), first apply on cotton some of the cocaine solution. This in a few moments makes the exposed part approachable, and if the opening through the dentine into the pulp is not as large as the end of the syringe point the syringe can be immediately placed over the point of exposure.

Having adjusted the syringe point, the piston is then to be firmly and steadily pressed down slowly at first and with increasing pressure, finally to be pressed down with considerable force, carrying the solution up and around the pulp to its extreme end. At the first impact of the liquid against the pulp the patient sometimes feels a shock—not worse, however, than one gives the patient when feeling with a probe to see if previous application of arsenious acid has done its work. If now the syringe point has been properly directed and fits over the exposure or into the opening in dentine so as to allow but little back flow, the operator can immediately open freely into pulp chamber with a bur, remove the pulp from the canals with barbed broaches; or even better when possible, enlarge the canals and remove the pulp at same time with a Gates-Glidden drill.

The advantage of this latter method lies in the fact that after the pulp has been entirely removed by a broach, if there is any delay in putting in the filling the inner walls of root or roots become sensitive again and it is as impossible to pass a probe into them as when the pulp was *in situ*.

A case or two by way of illustration:

Miss L. had been in Philadelphia during the winter, and

having gone away without the usual autumn examination a capped pulp had come to grief and an eminent dentist in Philadelphia had applied, presumably, arsenious acid. The patient returned to Boston with cotton dressing in the tooth and reported to me the day before departing for Europe, wishing to have the tooth filled. She said the tooth was "dead," but when I passed a probe into the distal root, I found it very much alive. It took but a moment, however, to pass a small syringe point down into the root, inject the the cocaine rather forcibly, and then with barbed broach remove quite a sizable piece of root pulp. The roots were then washed with antiseptics, dried, and filled with gutta percha.

This case is typical of a large class, and we all of us have or have had teeth with "life in the end of the roots" which have baffled our efforts to completely remove, and which therefore we have had to keep dressed and temporarily filled for months and even years waiting for complete death. As a fellow practitioner remarked to me the other day, the operation was worth everything to us for just those cases alone.

Mrs. R. is a patient of my brother's. He was called to see her for the first time in her sick room where she had been a nervous invalid for over a year. Two or three teeth presented exposed pulps. My brother thought to disturb her least by making application of arsenious acid. It was with the too often result—inflammation, pain, and no destruction of pulp. He then tried the method described here, and removed the pulps of two teeth without the slightest shock or pain to the patient. This too under the most disadvantageous circumstances at the residence of the patient. I have the records of fifty or more cases almost all of which can be classed as perfectly successful. Where failure has been the result it has been due to defect in carrying out the detail of the operation as described. Failure to get syringe point directly over exposure; failure to have syringe in perfect working order; failure to use at least a 20 per cent. solution; and last but not least, neglect to have a fresh solution of the drug.

The operation must be done carefully, methodically, exactly—as we specialists have to do our work. When so done it will prove a success and a great boon to the profession. It is hardly necessary to add that proper care must be taken to prevent the patient swallowing any of the drug, using, as is necessary, so strong a solution.

PNEUMONIC FEVER—ITS SYMPTOMATOLOGY.

BY EDWARD F. WELLS, M.D.,
OF CHICAGO.

INTRODUCTORY.

From 1874 to 1886, a period of twelve years there passed under my observation four hundred ninety-eight cases of pneumonic fever. These were encountered in private family practice and in a rural neighborhood, inhabited by natives of the North of Germany and their descendants. They were, almost without exception, members of families in good circumstances, occupied comfortable dwellings, dressed and lived well and were exposed, to an extent much less than ordinarily, to the inclemencies of the weather, the hardships of excessive toil and the cares of want. They were, moreover, of a parentage largely free from pulmonary consumption and cancer and wholly free from syphilitic taint.

Carefully kept clinical histories of the cases above referred to have been preserved and it is an analysis of these which serves as a basis for this study. In addition to this original material I have not hesitated to compare my observations and conclusions with those published by others.

The symptoms of pneumonic fever are usually clear and unequivocal, yet they are not rigid and immutable, but are endlessly modified by a great variety of circumstances. They are, for the most part, highly suggestive but not pathognomonic. In this, as in so many of the fields of medical science, we find that immediately we have accumulated an assemblage of affirmatory truths sufficiently large to serve as a basis for the formulation of a rule, numerous contradictory facts of more or less weight spring up to create distrust or compel exceptions. Nature persistently refuses to be confined in her marvelous operations by the restricting regulations of the conventionalist. Disease, of whatsoever name or character, should be viewed as an expansive, and not fully explored whole, and in an inquiring and liberal spirit. There can be no question as to the value to be placed upon the study of the ordinary and typical cases of an ailment, but if we do not desire to too narrowly confine our views we must not overlook and ignore the unusual, the complicated and the anomalous cases—and it will be found that in these varieties are comprehended a very large contingent of those encountered. Entering now upon the consideration of the clinical features of pneumonic fever in such an elastic mood we will quickly discover that the "exceptions to the rule" will engage quite as much of our attention as the law itself.

In viewing this malady from a clinical standpoint we are at once and irresistibly impressed by the fact that we are not looking upon a picture of still life, but that the patient is in the midst of a raging, momentous and terribly real conflict, in which the opposing forces are pitted against each other in an endless succession of varying combinations.

PRODROMATA.

Although an abrupt accession is the rule in pneumonic fever, yet a distinctly appreciable prodromal stage is present in a very considerable proportion of cases. This feature is particularly noticeable in some years, localities or epidemics. Thus in the great North American epidemic of the second decade of the present century a prolonged initiatory stage was the rule, and the same has been true of some other outbreaks.

An examination into the nature of the premonitory symptoms as they have been recorded in the histories of my cases leads to the conclusion that they are so varying as to almost defy analysis, and so equivocal that a diagnosis of approaching pneumonic fever can not be made from them. When present there is nothing peculiar about them:—nothing, indeed, which could lead the observer to a just conclusion as to whether the patient was to be the subject of a nameless slight indisposition, typhoid fever, variola, malarial ague, dysentery or—pneumonic fever. In short they are those peculiar to infectious diseases in general and are not particularly distinctive of the one under special consideration. The patient may complain of anorexia, nausea, vomiting, constipation or diarrhœa and other gastro-intestinal disorders; of headache, drowsiness or sleeplessness, irritability and fretfulness, restlessness and listlessness and other cerebral symptoms; of cough, op-

pression and thoracic soreness; of epistaxis, coryza and sneezing; of languor, lassitude and weakness; of chilliness and feverishness; of fixed and fleeting pains in the back, limbs, chest, muscles, etc.;[1] of anemia, sallowness and jaundice, and of many other symptoms, continuing for a shorter or longer period until the disease declares itself in unmistakable character.

Premonitory symptoms, in a diagnostic point of view, are of greater value in the aged than in the young. A dull headache, with drowsiness, irritability, sallowness, relaxation of the masseters, general weakness, anorexia and slight fiebrile movement has been, in my experience, so often the forerunner of an attack of pneumonic fever in elderly persons that I view it with suspicion and apprehension. One other symptom has particularly attracted my attention and that is an indefinite anxiety or alarm—a feeling of impending danger. This I have seldom observed as premonitory to any other disease—the nearest approach to it being the anxious restlessness which sometimes precedes gastric hæmorrhage.

My 72nd case is a good example of an assemblage of premonitory symptoms:—A young man, aged 20, of German parentage, and of excellent general health, was taken, May 16, 1879, with epistaxis and lassitude. Of an energetic nature he could now scarcely prevail upon himself to arise in the morning or to give up his chair after being seated—it was a task for him to move about, although he was not, as yet, weak. In a day or two his appetite failed and the sight of food became obnoxious. His tongue became coated and a foul mucous secretion accumulated in his mouth, especially in the morning. After a few days he became feverish, with suffusion of the eyes, slight deafness, dryness of the lips and restlessness. His bowels became confined and his urine was scanty, high-colored and deposited a copious sediment upon cooling. He was ill—too sick to be up and not prostrated enough to willingly lie in bed—yet careful examinations, repeated daily, failed to show any local cause for the symptoms, which were, in turn too indefinite to permit the diagnosis of any systemic disease, until, on the 26th inst., a severe chill was followed by all the ordinary symptoms of a severe attack of pneumonic fever, terminating in convalescence on the seventh day.

Andral's twelfth case is also a good illustration of this feature:—A man, aged 33, of a full and plethoric habit, for some time experienced headache, transient dizziness and epistaxis. On Dec. 16, 1822, when arising in the morning, he felt generally ill, with violent headache, tinnitus aurium, a sensation of burning heat over the entire body, etc. These symptoms continued and the face became flushed, eyes injected, pulse accelerated, tongue coated, etc. There was exaggerated pulsation of the temporal arteries, general debility, dullness of the intellectual faculties, anorexia, thirst, constipation, scanty urine and a slight cough. After an attentive examination the disease could not be located—all the organs seemed to be excited and upon the verge of inflammation, but in none was this an actual fact. These symptoms continued until the night of the 20th, when he awoke with a severe pain in the right side of the chest, which became almost insupportable when he inspired deeply or made the slightest movement. From this time the case assumed ordinary features and the patient died on the night of the 29th.[2]

This stage may be modified by pecularities of the prevailing medical influences, the presence in the system of the germs of other diseases, etc. Thus in the case of persons residing in malarious regions there may be chilliness, followed by febrile reaction, recurring at regular intervals for several days before the pneumonic disease is fully established.

A girl of 12 years had a chill on the morning of April 25, 1881, followed by fever and profuse perspiration. In the afternoon she was up and at play, ate heartily and slept well during the night. On the following morning she had a second attack, accompanied by bilious vomiting, delirium and convulsions. This exacerbation continued until after midnight, but ended as the first in a complete intermission. On the third morning fever again recurred and became continuous. It was not, however, until the following day that the disease assumed a pulmonary aspect and could be recognised as pneumonic fever—the lower lobe of the left lung being the seat of the local inflammation.

A lady, aged 74, was taken with tertian ague in Sept., 1884. After having been three weeks ill she came under my observation on Oct. 10. Under treatment the ague promptly ceased and the patient soon regained her usual health. On Nov. 2 she had a chill at 10 A.M., followed by fever and profound prostration. On the following morning she felt better, arose and walked about the house, but was seized by a second chill at 11 A.M. This was more severe than the first and was followed by a higher fever and even greater prostration. During the night she was delirious. Next morning she expressed herself as feeling better, yet she preferred remaining in bed. At noon she had a third profound chill, followed by ardent fever, delirium, coma and consolidation of the entire right lung. She coughed a few times and expectorated characteristic sputæ, but she remained in a dazed stupor until death occurred two days later. At the autopsy the entire right lung was found hepatized (red), with the markings of the ribs plainly shown.[3]

INVASION.

The invasion of pneumonic fever is, in the majority of cases, sudden. The patient is usually taken with a chill, accompanied or quickly followed by fever, cough, dyspnœa and thoracic pain[4]. This[5] was the mode of access in nearly two-thirds of my cases, and the experience of other observers has been similar.

Thus in the Plague of Athens, "in general the persons were attacked by it suddenly, while in full health and without ostensible cause,"[6] and such has been the language of the historians of a majority of the epidemics which have occurred and of the observers of individual cases[7]. Fox[8] says that "in a large proportion of cases the disease commences suddenly and without previous warning, in persons who up to the moment of seizure had felt perfectly well, and it is not unusual[9] for the invasion to occur during the night after the patient has gone to bed in his usual health.

To the patient there is something very alarming in the remarkable suddenness—like an electric shock from a concealed battery—with which the initial chill of pneumonic fever interrupts the course of health. Without feeling in the least unwell he retires to bed, to be awakened in the middle of the night to find himself the central figure in the midst of a raging storm of rigors. His teeth chatter; his feet freeze; his knees knock together; frigid trains speed up and down his back and spread out over the surface; his breathing is oppressed; some demon weighing tons sits upon his breast; he breathes deeply, he coughs, and is horrified at the keen pain which shoots through his side; he clasps the painful spot and coughs again, but all in vain for the agonizing pain is not lessened; his head aches—throbs to the

[1] Pause—Lungenentzündung, Leipsig, 1861, S. 67.—especially noticed aching of the joints in the afternoon and at night, but in my experience this was not observed oftener at this period of the day than at other times—beyond the evening exacerbations noticeable in nearly all diseases.

[2] Andral, Clin. Med., Vol. ii, p. 132.

[3] In studying these cases in which malaria evidently played an important rôle in the prodromal stage, we must not lose sight of the fact that distinctly intermittent or remittent symptoms may be present without the slightest suspicion of malarial infection. See Green, Quain's Dic. Med., N. Y., 1883, p. 880; Huss, Lungenentzundung, Leipzig, 1861, S. 57; Kœttnitz, Inaug. Dissert., Halle, 1882. S. 33; Taylor, N. Y. Med. Jour., 1887; Thieme, Inaug. Dissert., Jena, 1865, and many others.

[4] Satterthwaite, Phila. Med. News, Jan. 5, 1889, p. 3, places the order of events as follows:—(1) Pain, prostration, cough; (2) severe chill; (3) nausea, and (4) rise of temperature. This has not been the case in my experience.

[5] I refer to the sudden onset of the disease.

[6] Collins' Translation of Thucydides, N. Y., 1883. p. 49.

[7] See Cleghorn, Epidem. Dis. Minorica, London, 1762, p. 261; Huxham, Epidemic Diseases, London, 1748, Vol. ii, p. 59; Stokes, Med. Times and Gaz., May 26, 1855; et al.

[8] Reynold's Syst. Med., Phila. 1880, Vol. ii. p. 163.

[9] In my experience nocturnal invasion has been very common.

point of bursting, he will say—and all his joints are racked with pain; he is dizzy; his brain reels, and all his sufferings are aggravated by the vomiting which ensues. The scene rapidly changes. Soon ardent fever is developed; the face is flushed; the cheeks glow; the skin is dry and burning hot; the pulse bounds excitedly; the dyspnœa continues; thirst is intense; the cough is acutely painful; the expectoration becomes bloody, and the hapless victim, with an expression of alarm, anxiously appeals, with his eye, to each one visiting his bedside. Thus the patient reposes in bed in a constrained posture, a picture of alarm, suppressed excitement and human suffering, and awaits with dread each coming event until, in a few hours, the disease has reached its height.

Usually the pulmonary symptoms declare themselves at once, but in a certain proportion of cases we have all the indications of a severe illness without any discoverable local manifestation. There is the sudden or gradual access of febrile symptoms but absolutely no trace of pneumonic changes can be discovered, until, after the lapse of a more or less prolonged period, they disclose themselves by the development of characteristic local symptoms and signs. We have, in these instances, systemic fever without local changes, as we have, at the end of the attack, local affection without fever.[10] That this is, in the majority of instances, a late localization of the disease, and not merely an obscuration of the early physical signs, is clearly proven by the fact that in these cases the local affection pursues an ordinary course as to duration and sequence of the signs, which would evidently not be the case if they were only hidden.

A girl of 14 years was attacked during the night with a chill, followed by fever, delirium, muscular tremor, etc. The fever was continous and all the symptoms indicated that the patient was laboring under a grave disease. The breathing was peculiarly oppressed and there was a slight cough, yet daily attentive examinations of the chest failed to detect any signs indicative of local affection until the fourth day when it was possible to demonstrate a beginning consolidation of the base of the left lung. On the next day the local phenomena were unmistakable, and the case pursued an ordinary course toward recovery.

Bolles' case was as follows:[11]—A young man was taken ill, June 17, 1880. with febrile symptoms, chilliness, some cough, quick pulse and flushed cheeks. By the third day he was so low that two competent physicians expected him to die. At this time his lungs were carefully examined and absolutely nothing abnormal discovered. The chest expanded and contracted perfectly and the respirations were only 20 per minute. On the fifth day there was noted a patch of bronchial respiration and bronchophony, not very well marked, at the inner border, of the left scapula. On the sixth day this patch was enlarged and there was dullness on percussion, and on the seventh day the disease was fully devolped.[12]

The late localization of the disease has an important bearing upon our conception of its nature, inasmuch as it affords strong presumptive evidence that it is a general disorder with a local manifestation.

By some writers who consider cold an efficient cause of the malady it has been thought that the period intervening between the exposure and the development of the attack is a reasonably exact measure of the duration of the stage of incubation.

Thus a gentleman riding against a raw wind felt chilly, and upon arriving at his residence, an hour later, was seized with a rigor which ushered in an attack of pneumonic fever.

A farmer engaged, at noon, in shocking wheat exerted himself greatly, in order that he might complete his work before the advent of a threatened storm, and perspired freely. In this condition he was overtaken by a shower of cold rain and hail and became thoroughly wetted. Although he quickly exchanged his dripping garments for others which were warm and dry, yet he was taken with a pneumonic chill six hours later.

A man engaged in chopping wood and perspiring freely, ceased work and sat down for a long talk with a neighbor. The March day was cold, raw and windy and the laborer's chest was covered only with a thin cotton shirt. Upon rising he felt tired, stiff, sore and chilly. This was about 4 P.M. During the night he was restless, slept but little and had frightful dreams. All next day he felt badly, and had headache, articular pains, anorexia, vomiting, irritability of temper, thoracic soreness and an insignificant cough. In the evening he had a rigor, followed by a severe attack of pneumonic fever.

A woman at the wash-tub perspired freely and exposed herself, with scanty clothing, to a cold wintry wind. Three hours later a severe pneumonic chill sent her to bed for a ten day's illness.

I might multiply these instances from my own records and from the published experience of others[13] but the result would be simply a tedious repetition of similar cases. In all my cases, however, the attack followed quickly upon the exposure.

This is in exact accord with the experience of LaRoche[14] who, speaking of the vicinity of Philadelphia, says that a prolonged incubation may have been noticed elsewhere "but so far as the experience of the physicians of this section of the country extends, it may be safely averred that nothing of the sort has occurred, and I tax my memory in vain for a reference bearing on this point to some of the many publications, foreign and native, that have passed through my hands. Never and nowhere have I seen, heard or read of a case in which the attack has come on, whether abruptly or preceeded by premonitory symptoms, more than a few days after exposure."

The fallacy of all this is, however, obvious. Pneumonic fever is certainly caused by a *materies morbi, sui generis*. That exposure to cold may, and probably does, place the system in a condition favorable for the reception and action of the specific cause may be admitted, but this exposure is not the essential element. Now, if it be granted that another, and a special agent, besides cold, is necessary for the production of the disease, we can never be certain whether the specific germ has previously entered the economy and, lying dormant and awaiting a favorable opportunity to begin its work, or whether it enters the system at the identical moment of "catching cold," or, finally, whether the entrance is subsequently effected.

In this connection it may be mentioned that patients often mistake the initial chilliness or rigor of pneumonic fever for exposure to cold, and this source of error and fallacy must be born in mind when considering this question.

The disease has also been considered contagious, and it has likewise been proposed to measure the period of incubation by estimating the interval between the contact with other cases and the outbreak

[10] Cases of this description are in my collection and they have been observed by Andral. Op. cit., p. 184;—Baginsky, Pneumonie u. Pleuritis, Tübingen, 1880, S. 10;—Bolles, Boston Med. and Surg. Jour., Feb. 3, 1881, p. 105;—Cincinnati Lancet and Clinic., Nov. 3, 1883, p. 398;—Cleghorn, Epidem. Dis. Minorica, p. 261;—Heiss, Inaug. Diss., München, 1857, S. 6;—Sturges, London Lancet, N. Y., 1881, Vol. 1, p. 287;—Tyson, Ibid., 1881, Vol. 1, p. 253;—et al.

[11] Boston Med. and Surg. Jour., Feb. 3, 1881, p. 105.

[12] Grisolle, Traité de la pneumonie, p. 181, speaking of these cases says that in some he has "noticed for four days intense febrility without being able to discover on the part of any organ, and especially on the part of the lungs, any lesion explaining it," and Andral, Sup. cit., makes a similar statement.

[13] Ziemssen, Pleuritis u. Pneumonie, 1862. S. 159, gives a long list of cases.

[14] Pneumonia, Phila., 1854, p. 391.

in the patient. Here, again, arise the same doubts as in the preceeding series of cases.

It follows, then, that we are, as yet, unable to state, with any degree of certainty, the duration of the stage of incubation. Such stage, nevertheless, does exist, and the future may delineate its characteristics and measure its exact duration.

CHILL.

A chill is almost always the initial symptom of the sudden invasion of pneumonic fever. It is usually accompanied by rigors and is generally more intense and pronounced than in any other malady except pyæmia[15] and malarial ague. The duration of the chill varies from a few minutes to several hours;[16] its decline being gradual.[17] In some cases the chill is replaced by a sense of chilliness, alternating with flashes of heat—if the patient is in bed and quiet he feels feverish, but with the slightest jar or movement chilly sensations course up and down the back, spreading thence, as from a centre, to various parts of the body. This continues for a short time and is replaced by a sensation of heat until another movement causes the chilliness to reappear. The profound chill often passes off with this sort of chilliness. The duration of this recurrent chilliness is usually longer than that of the decided chill—sometimes being twelve or more hours. There is usually a single chill, although there are occasionally multiple recurrences.[18] It usually immediately precedes the development of the local symptoms, but in some cases it may precede these by several hours or days. The initiatory chill was present in 86 per cent. of my cases. In 199 cases the chill was noted as being severe; in 97 there was "a chill;" in 76 there was "a light chill," and in 56 there was simply "chilliness."

The initiatory chill was present in 92.6 per cent. of Fismer's[19] cases; in 92.5 per cent. of Lebert's[20] cases; in 82 per cent. of Chomel's[21] cases; in 80 per cent. of Huss' cases[22]; in 79 per cent. of Grisolle's cases;[23] in 60 per cent. of Speck's[24] cases; in 37 per cent. of those analyzed by Stortz;[25] in 63 per cent. of Schapira's[26] cases; in 94 per cent. of Wunderlich's[27] cases; in 65 per cent. of Fenwick's 502[28] cases; in 77 per cent. of Louis'[29] cases; in 75 per cent. of Lépine's[30] cases; in 72 per cent. of Kocher's[31] cases; in 69 per cent. of Bleuler's[32] cases; in 64 per cent. of Fox's[33] cases; in 60 per cent. of Durand-Fardel's[34] cases; in 50 per cent. of Juergensen's[35] cases; in most of Gerhard's[36] cases and in all of the 63 cases of the Loberg epidemic.[37]

As to the severity of the chill Fismer[38] found that of 219 cases, 84 had rigors, 41 had a chill, 42 had a light chill, 35 had a very light chill and in 17 the chill was lacking.[39]

Scheffels[40] in describing the appearance of the chill says that the patient suddenly felt a sensation of warmth, then heat, and, a short time afterwards a chill.

Chomel[41] thought that when the attack began at night the chill was generally absent. This, however, is contrary to my experience. Early in my professional career I was impressed with the remarkable frequency with which the pneumonic chill occurred at night and during the hours of sleep, and subsequent observation has only confirmed my early conclusions; for of 428 cases the chill occurred between the hours of 9 P.M., and 6 A.M., in no less than 231.[42]

Chill is, however, absent in certain forms of the disease or conditions of the patient. Thus in the case of young children it is usually replaced by slight chilliness, coldness of the extremities, nose and ears, paleness of the surface, blueness of the nails, etc.[43] In the aged, also, an initial chill is less frequent than in adults, but when a chill occurs it is more distinctive of pneumonic origin. In the weak, cachectic and diseased it is also often lacking.[44] This is also true of some epidemics.

Juergensen[45] states that very fleshy persons escape the chill, but I can not confirm the statement, it so happening that every fleshy person whom I have observed with this disease had a very distinct initiatory chill.

Chills may occur after the disease has been fully established[46] and even during convalesence.[47]

A young lady, 17 years of age, was taken, Apr., 28, 1880, with a chill, followed by cough, pain in the right side, sanguineous expectoration and the ordinary signs and symptoms of pneumonic fever locally affecting the apex of the right lung. Crisis occurred on the seventh day and convalescence seemed fully established, when, three days later, she had a second severe chill and rigor, followed by a pulse of 116 and a temperature rising to 102.5°. The febrile symptoms continued only a few hours, after which convalescence was uninterrupted.

A CASE OF SPINA BIFIDA WITH CURIOUS DISTURBANCES OF THE SEXUAL FUNCTIONS.

BY SYDNEY KUH, M.D.,
FROM CHICAGO.
ASSISTANT AT THE CLINIC OF PROF. ERB, IN HEIDELBERG.

Philipp Eller, twenty-six years of age, a tailor, was admitted into my ward on the 9th of July, 1891. His father had died from dropsy, there was perhaps some case of phthisis in the family, certainly no nervous taint in the ancestry. The patient has ever since the time of his birth, a slight prominence in the sacral region of the spinal column upon which hair grew ever since he can remember. It cannot be ascer-

15 Including puerperal fever.
16 In my cases the duration was from a few minutes to six hours. Andral, Med. Clin., Vol. ii, p. 140, mentions a case in which shivering continued for more than five hours. See also Schuyler, N. Y. Med. Jour., Oct. 13, 1883, p. 400.
17 This point seems to have escaped the notice of writers.
18 See also Schapira, Inaug. Dissert., Würzb., 1877, S. 29; Stortz, Inaug. Diss., Würzb., 1884, S. 57, and others.
19 Deutsche Arch., f. k. Med., Bd. xi, 1873, S. 391.
20 Klinik d. Brustkrankheiten, Tübingen, 1873.
21 Pneumonie, Leipzig, 1841.
22 Lungenentzündung, Leipzig, 1861, S. 33 u. 144.
23 Inaug. Diss., Marburg, 1870, S. 7.
24 Inaug. Diss., Würzb., 1884, S. 57.
25 Inaug. Diss., Würzb., 1877, S. 29.
26 Inaug. Diss., Tübingen, 1858, S. 25.
27 Lancet, 1891, Vol. 1, p. 248.
28 Traité de la pneumonie, Paris, 1841.
29 Rech. sur Fiev. Typh., T. ii, p. 128.
30 Pneumonie, Wien, 1883, S. 38.
31 Luengenentzündung, Würzb., 1866, S. 38.
32 Inaug. Diss., Zürich, 1865.
33 Reynold's Syst. Med., Phila., 1880, Vol. ii, p. 163.
34 Mal des vieillards.
35 Ziemssen's Handb., Leipzig, 1877, Bd. V, S. 83.
36 Am. Jour. Med. Sci., Vol. xiv, p. 328.
37 Am. Jour. Med. Sci., Jan., 1883, p. 262.
38 Op. cit.
39 For further information consult Doubleday, N. Y. Med. Rec., Mar. 28, 1885; Hermann, Lungenentzündung, München, 1880; Pause, Lungenentzündung, Leipzig, 1861; Stortz, Op. cit., S. 57, et al.
40 Inaug. Diss., Würzb., 1886, S. 5.
41 Op. cit., S. 151.
42 See also Fricke, Inaug. Dissert., Göttingen, 1886, S. 22; Hart, Jour. Am. Med. Ass., Oct. 10, 1885, p. 393; Juergensen, Op. cit., S. 393, and others.
43 Convulsions, sopor. coma, etc., sometimes take the place of the chill, even in adults, as shown by the cases reported by Farquharson,—On some Forms of Pneumonia, London, 1871.—and by two in my own collection. For further information see Holt, N. Y. Med. Rec., Feb. 14, 1885, p. 174 and others.
44 See Greneau de Mussy, Gaz. des Hôp., Avr. 9, 1846; Huss, Op. cit., S. 33, and others.
45 Op. cit., S. 83.
46 See also Haw, London Lancet, 1887, Vol. ii, p. 911; Heiss, Inaug. Diss., München, 1857; Sturges, Nat. Hist. Pneumonia, London, 1876; Swett. Dis. Chest, N. Y., 1856, p. 99, and others. It has been supposed that chills occurring after the disease has been established were indicative of the involvement of fresh pulmonary territory, but my cases afford no evidence in favor of this view.
47 Several such cases are in my collection.

tained at what time he learned to walk, but he is positive that he could go to school without assistance at the age of six years. He could not, however, walk as well and as long as other boys of his age, the legs, especially the left one tiring rapidly. Later on the lower extremities, particularly below the knee, remained unproportionately thin, and the toes stood in abnormal position, all of these symptoms being more pronounced on the left side. There was no spontaneous pain. Sensation had always been impaired somewhat in left leg and foot. It can not be ascertained with any degree of certainty whether vaso-motor or secretory disturbances existed.

The discharge of urine had always been impaired, and there had been chronic constipation; both excretions invariably pass off together, so that the patient is compelled to sit on the water-closet whenever he wishes to pass his urine. The sexual impulse was but very slight. He had never attempted cohabitation. Up to about a year ago he had occasionally ejaculations of semen accompanied by slight erections of very short duration, especially when he was compelled to move rapidly or to do fatiguing, heavy work. These erections were also very frequent while the patient was being shaved, came on regularly whenever the barber went over his face twice (gave him a "close shave") and also came now and then when he had his hair cut. There was never more than one ejaculation during one shaving or hair-cutting.

During his boyhood he suffered a good deal from headaches, which were accompanied by exhaustion and a sensation "similar to fever." During one of these attacks he, in his words, lost consciousness "and ran about the room, shrieking." There never had been any epileptic fits. He made but slow progress in school, learned with great difficulty. Strong odors immediately gave rise to headaches.

It happened now and then that somebody struck the prominence on his back. Immediately his lower extremities would fly from under him, he would fall on his buttocks, the legs taking the tailor position, and being utterly powerless. At the same time he had the sensation of something piercing his head, he would shriek and become unconscious for a few moments. His falling was connected with a sudden very intense pain in the legs and the head. For some time he could not succeed in arising, the entire body trembled, and he yelled loudly. For two days thereafter he would feel as though he had been whipped; as soon as anybody approached him he would begin to tremble in the apprehension that something might happen to his back.

There were never any signs of an affection of the cerebral nerves or of those of the upper extremities. The power of speaking was quite normal. No polyuria, but he had to urinate more frequently than other people, especially after having received a blow in the small of the back.

There had been no stiffness of the legs up to December 27, 1889, on which day he was taken with influenza, and on the following morning he noticed that his legs had become stiff and showed spasmodic contractions. No pain, no disturbance of sensation. After this attack of influenza the spastic symptoms increased in intensity, and since a year there is also tremor of the right, rarely also of the left arm after work. There has not been an erection or ejaculation for one year. When he was sewing the fingers of the right hand would occasionally spread asunder. This exacerbation had been progressive up to the date of admittance to the hospital.

During the last year electricity and warm baths had been used, under which treatment his troubles grew worse. In the month of May, 1891, he suffered from an unknown disease, accompanied by fever.

State on admission.—Well built man of medium size. Muscles well developed. The intelligence of the patient is rather below the average; he is very talkative. The skull is very narrow in its anterior portion, very broad in the parietal region. The greatest circumference measures 57.3 cm., somewhat more than the average.

The cerebral nerves, the upper extremities and the thoracic and abdominal viscera are normal.

In the region of the sacrum in the median line there is a tumor approximately of the size and form of half an orange lying immediately below the skin and fluctuating. This part is very sensitive to pressure. The posterior osseous wall of the spinal canal is absent in the entire length of the sacrum. The tumor is covered with a dense growth of long black hair, its centre being occupied by a horizontal retraction of the skin. Below the prominence, corresponding to the point of the os coccyx the skin is adherent to the bone and retracted in the form of a funnel. Directly above the tumor, *i. e.*, in the lower part of the lumbar region, the spine is somewhat sensitive to pressure.

There is no marked atrophy of the lower extremities, the left being but slightly thinner than the right. There are fibrillary contractions in the muscles of both legs, more pronounced on the left than on the right side. The patient is able to move the limbs in all joints. The left knee is slightly flexed, cannot be extended completely, either voluntarily or passively. The M. ileo-psoas, the quadriceps cruris and peroneal muscles are paretic on the left side. There are marked tonic muscular spasms in the left, slighter ones in the right limb, especially in the flexors of the knee and the adductors. There is no disturbance of coördination, no intention-tremor. Both mechanical and electrical irritability of the muscles are unchanged, only that mechanical stimuli produce marked fibrillary vibrations. Pes equinovarus, more pronounced on the left than on the right side.

Sensibility.—There is a diminution of sensibility to touch in the right thigh, and in the left leg below the knee; of the sensibility to pain in the entire right lower extremity; of the sensibility to temperature in the left leg below the knee. The patient locates the sensations correctly.

Reflexes.—The abdominal and cremaster reflexes are normal on both sides, the right plantar reflex is not so marked as that of the left. No reflex from the tendo achillis. There is a reflex upon tapping the tendon of the M. tibialis posticus, also stronger on the left side. Adductor reflexes rather excessive on both sides.

The lower extremities perspire less than the rest of the body. They are covered with short black hair.

The urine contains neither albumen nor sugar. The temperature is normal; the pulse is strong, its rate varies from 80 to 112.

Treatment.—Galvanic current applied to the spinal cord and the lower extremities. Kalium iodatum 0.75–1.5 gr. pro die. After three days the patient is able to ascend steps without assistance, which he had

been unable to do. Later on he did not stand kalium iodat. well, and the medicine was changed to pills of argent. nitric.

On the 17th of September, 1891, Eller was discharged from the hospital. There were then no clonic contractions of the muscles nor pain. The patient was able to walk with greater ease, to ascend steps without difficulty. His weight had been increased by 6.5 pounds.

Remarks.—As to the diagnosis there can be no doubt that the patient suffers from spina bifida. The tumor of the sacral region covered by long hairs, fluctuating and evidently in connection with the central nervous system, the pes equino-varus, the disturbance of sensibility and of the functions of the sphincters are conclusive proofs. The trouble grew worse after an attack of influenza. Experience has taught that la grippe is both very liable to produce nervous disease of all kind and to aggravate existing ones. The curious disturbances of the sexual functions, especially their irritability to abnormal stimuli have to my knowledge, not been previously observed in cases of this kind.

A STUDY OF THE REQUIREMENTS OF THE AVERAGE PROSPECTIVE MEDICAL STUDENT IN 1892.

BY BAYARD HOLMES, M.D.
SECRETARY OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO.

It has been often questioned whether the average medical student is better educated to-day than ten years ago or not. Not knowing the species then, I cannot answer.

I happen to have in my possession evidence of the scholarship of the average man who proposes to study medicine to-day. This evidence has come in the course of my regular correspondence during the past year. For the purpose of this paper I have selected one thousand consecutive correspondents and tabulated their educational qualifications. These are a continous series and they include *every* correspondent, who gave me the necessary information, going back far enough to secure a necessary decimal, one thousand. None of them go further than one year back.

1. Number of prospective medical students having A.B., B.S., or other corresponding or succeeding degrees	185
2. Graduates of High Schools which are accredited to State Universities	211
3. Graduates of State Normal Schools or City Normal	80
4. Graduates of Dental or Pharmaceutical Schools	69
5. Holders of certificates of completion of pre-Medical course in universities	25
6. Other adequate education but without diploma	252
7. Total number who present evidence of sufficient education for admission to the College of Physicians and Surgeons, or of any college requiring only the minimum of the Association of American Medical Colleges	822
8. Number who do not present evidence of such education though filling out the blanks in other particulars	198
Total consecutive correspondents considered	1000

Many of the best educated men are to be found in class 6. These men cannot present any diploma, but are in many instances better educated than the graduates of scientific or high schools. We would conclude then that less than twenty per cent. (18.5) of prospective medical students are graduates of colleges with the bachelor's degree, that a little more than twenty per cent. (21.1) are graduates of accredited high schools, that two and a half per cent. only are graduates of pre-medical courses in universities, and twenty-five per cent. are able to pass an examination in English, mathematics, physics and Latin, as presented by the rules of the Association of American Medical Colleges. Thus it appears that only twenty per cent. of prospective medical students are shut out by the requirements of the Association. These statistics may encourage some timid schools to insist on this requirement of the Association.

It may be asked, are these statistics fair and reliable? So far as the students are concerned they are probably sufficiently reliable for our purpose. It may be reasonably premised that students who have the required education more readily fill out the blanks than those who cannot answer the questions in the affirmative. The blank was as follows:

Name. . . . . Age. . . . Nativity. . . . . .
Education. . . . . .
Have you a degree? . . . . . What? . . . . . .
Where obtained? . . . . . Time required . . . . . .
Have you graduated at a high school?
If so, what did your course cover in Mathematics, Physics and Latin? . . . . . .
Have you studied in a medical college? What one? When? . . . . . .
Address. . . . . P. O. . . . . .
County. . . . . State . . . . . .

Another source of error is to be found in the fact the correspondence was usually begun through physicians and educators and the names of those only were asked for who had "a good preliminary education." These statistics are derived largely from the six States surrounding Chicago.

With these facts before us it may be seriously asked if it is advisable to make the degree A.B. or B.S. a requirement for admission to the medical school. It is certain that all our schools could not make such a requirement. It would probably pay one or two favorably located schools to re-organize their methods and conclusions so as to give a course adapted to the educated student. Such schools would have a hard struggle for a few years, and would need a temporary or permanent endowment, but in time they would secure their own. Their course would be shorter. It would be conducted on different plans and by a different sort of men, but the success would be enviable.

At the college that I represent one hundred and twelve students asked for entrance certificates in October 1892; of these, one hundred and one presented evidence of scholarship from colleges or accredited high schools, eleven wrote the examination. One failed and was refused. Seven were unable to write the examination in Latin satisfactorily, and were conditioned in that study. Three wrote the whole examination satisfactorily.

THE laws of Michigan forbid any railroad within its borders to employ other than total abstainers from alcoholics as engineers, train-dispatchers, firemen, brakemen, or other railroad servants. The penalty is said to be $500 for each offence. Yet many of the passenger boats in said State have open bars on board for the patronage of all.—*American Lancet.*

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:
PER ANNUM, IN ADVANCE $5.00
SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any time and be sent to
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 68 WABASH AVE., CHICAGO, ILLINOIS.

All members of the Association should send their Annual Dues to the Treasurer, RICHARD J. DUNGLISON, M.D., Lock Box 1274, Philadelphia, Pa.

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SATURDAY, JANUARY 7, 1893.

THE ORGANISMS OF MALARIA.

LAVERAN'S discovery in 1880 of organisms in the blood of malarial patients has been verified and elaborated by pathologists and clinicians the world over. In Italy the study of LAVERAN'S organisms has been pursued with great enthusiasm and persistence, and we owe much of our knowledge of their nature, and of their relation to the various forms of malaria, to the labors of such men as GOLGI, MARCHIAFAVA, CELLI, FILETTI and GRASSI. The researches of the last two upon the structure of the organisms leave no doubt as to their animal nature, demonstrating conclusively the presence of vesicular nuclei, and it is now universally accepted that they belong to the protozoa, and their faculty of amœboid movement brings them under the rhizopoda. In the United States COUNCILMAN in Baltimore, OSLER in Philadelphia and in Baltimore, WALTER JAMES in New York, DOCK in Galveston and Ann Abor, as well as many others, have been able to fully corroborate the results obtained by the European investigators. In India VANDYKE CARTER, Professor in the Grant Medical School of Bombay, has studied the organisms elaborately and found their demonstration to be of great value in the differentiation of malarial from other forms of fever. At the present time all modern clinicians make routine blood examinations in all doubtful fevers, and the diagnostic importance of the malarial parasites has been repeatedly emphasized by the report of cases from the clinics of America, Germany, the Scandinavian countries and elsewhere, many of them in regions where malaria is practically unknown, only imported cases occurring. The amœbæ have not yet been successfully cultivated artificially, but their etiological relation to malaria is considered quite evident because of their constant presence in its various clinical forms; because of the relation which GOLGI and other Italians have shown to exist between the phases of the development of the organism and the malarial paroxysm; because the morbid anatomy of malaria corresponds entirely to what would be expected from the distinctive effects of the parasites upon the red cells, namely: corpuscular disintegration and pigment accumulation, and their results such as capillary obstruction with organisms and detritus in all the important organs of the body in acutely fatal cases, and pigmentation, connective tissue increase and anæmia in chronic cases; and also because quinine, in arresting the clinical manifestations of malaria, appears to have a specific effect upon the amœbæ, which completely disappear from the blood.

There is considerable difference of opinion among the investigators as to the relation to each other of the varieties of amœbæ observed in malaria. It will be recalled that GOLGI and others have shown that the regular intermittents depend upon amœbæ with quite distinct morphological differences, all of which, however, are endoglobular and grow and become pigmented during the intermission, so that at the time of the paroxysm they nearly or quite fill the decolorized red cell, the pigment being in the centre of the amœba; as the paroxysm occurs the amœba undergoes segmentation into from six to twenty spores. The apyretic stage corresponds to the vegetative, the paroxysm to the proliferative phase in the evolution of the amœba. If the vegetative phase occupy twenty-four hours then fever will assume a quotidian, if forty-eight hours a tertian, if seventy-two hours a quartan type. In the remittent and pernicious forms a small amœba is described, and in malarial cachexia intercellular and free variously shaped organisms are found. In all types of malaria are found atypical organisms, ciliated and crescent-shaped, whose relation to the essential amœba present is not yet understood. NOW LAVERAN maintains that the various clinical forms of malaria depend on the same single polymorphous amœba, the various types of fever being the expression of the individual reaction of the person into whose blood the amœba gains entrance. This simple and fascinating theory is opposed by GOLGI, who maintains that the various malarial fevers depend on three varieties of amœbæ, and FELETTI and GRASSI describe five distinct malarial blood parasites. This question is yet unsettled, and so are many others in regard to the etiology of malaria: we do not know anything in regard to the amœbæ outside the body, nor how they enter the body or leave it, but we do know positively that in malaria there are found typical organisms in the blood by means of which we are able to distinguish between this and other fevers. In the tropical and subtropical regions this fact should be utilized and attempts should be made to more definitely define the large number of fevers there occur-

ring by studying them thoroughly in the light of LAVERAN'S discovery. In the United States it is now possible to demonstrate precisely whether such a thing as typho-malarial fever exists or not; routine blood examinations during life and careful anatomical studies after death would soon settle the question permanently. The demonstration of the amœbæ of malaria is not laborious and they should be looked for by the general practitioner everywhere in all obscure cases of fever, so often imperfectly diagnosticated, with the assurance that in a fair number of instances positive results will be obtained.

THE PRESENT STATUS OF MEDICAL EDUCATION IN THE UNITED STATES.

Indications point to a pronouncedly higher standard of requirements upon the part of the medical colleges of this country. The year just closed has witnessed a change of the curriculum of fully 25 per cent. of the entire number of colleges. This change has consisted in extending the course of instruction from two to three courses of lectures before conferring the degree of M.D. The number of colleges that will graduate students at the end of their second course of lectures the coming spring are less than ten per cent. of the whole number of schools in the country. With the exception of two schools they are confined to a limited section of the country. Even these schools will in the near future extend their course by an additional year. The experience of these schools raising their standard by requiring four courses of lectures before graduation has been all that their faculties or friends would anticipate. Instead of a falling off in the number of students there is an actual increase in attendance. The University of Michigan, Harvard, University of Pennsylvania, and Chicago Medical Colleges have lost nothing by their change of policy.

Their course has met the approval and admiration of every friend of scientific medicine in the country. Their new curriculum enables them to afford a thorough scientific and practical course of medical instruction upon a par with the very best schools of Europe. The product of their labors will bear fruit in better material. The experience of all colleges that have extended their course of instruction the last few years, has been an increased income from fees of students. Instead of the schools, requiring four courses of lectures before graduation, losing in numbers they will rapidly gain. This situation is due to various causes. The result of the public school system of this republic has been to make the masses of the people at least friends of a thorough education: as a result of the agitation of the subject of higher medical education the attention of the public has been repeatedly directed to our shortcomings and there has resulted in consequence thereof most efficient medical legislation. The result of this legislation has been most beneficial both to the public and the profession. As the result of several thousand examinations the last few years, they have revealed the character of work being done by the low grade colleges. Fully 25 per cent. of their students have failed to receive a license while the students hailing from the higher grade colleges have very rarely failed. About .985 per cent. of their number being licensed.

There are at the present time fifteen States with practice acts that require an examination of all persons desiring to practice medicine in the respective commonwealths. These States include nearly 50 per cent. of the entire population. From present indications all the States will be equipped against the products of the "Commercial Medical College" in the near future. The result of these changes is quite obvious. The intelligent young man realizes that he can only obtain a scientific medical education in those schools having the facilities to teach and that have a thorough curriculum. In consequence of these changed conditions the high grade school of the future will reap the harvest at the expense of their weaker competitors. The increase of requirements will lessen the number of men entering the profession but not to that extent desirable. The total income of the colleges however, will be increased by extending the requirements to four years. We anticipate many changes for the better the present year. The attention of the profession is being centered on a few of our great metropolitan schools the last few months. The result of their deliberations is awaited with interest. Concert of action upon the part of less than a half dozen of the stronger schools would result in the adoption of the four year requirement by every school in the country in a remarkably brief period of time. In the consideration of this important and vexed problem, to both the public and colleges, it may as well be recognized first as last, that the character of your labors will be revealed in the future, by your students in the examinations before the various State boards. If these examinations reveal a failure of a large percentage of your students before various State boards, your halls will be deserted. This has been the experience of schools in Europe and it will be the experience here. Believing it in your power we appeal to the colleges of the country to solve this burning question in a business-like, intelligent and conscientious manner.

SURGEON GENERAL ILLINOIS STATE NATIONAL GUARD.—Gov. Altgeld has selected for Surgeon-General of the Illinois National Guards, Dr. N. Senn of this city. This appointment will give general satisfaction to the physicians of the State who are interested in the elevation of the Medical Service of the

National Guards to a high standard of excellence. Doctor Senn has had a large practical experience in this line of work. He is the founder of the National Association of Military Surgeons of the National Guards of the United States and President of that Association since its organization. The Association is composed of the medical officers of the regular Army and the National Guards, and has the official recognition of the General Goverment. The third annual meeting will be held in this city during the month of August in connection with the Worlds Fair.

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

The following letter has been received from an esteemed correspondent, and as it refers to an item that appeared in the JOURNAL of December 24th, 1892, I copy it for the benefit of any others among your readers who may have been disturbed by the statements quoted.

"—— INDIANA DEC., 28, 1892.

DR. G. BETTON MASSEY.—*Dear Sir:*—I hope you will not think me presumptuous in asking you how long you have been insane? I refer you to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vol. XIX, No. 26, quoted from the *National Medical Review*. Is Price insane? Or is he suffering from—— —— Yours very respectfully,

—— ——M.D."

I have thanked the Doctor for his kindly solicitude, and have assured him that I am at least sane enough not to venture to answer the last question in his letter. Since, however, the item quoted from Dr. Price appeared in the JOURNAL of Dec. 24th, page 756, under the head of "Selections" rather than "Medical Humor," it may be well to point out the absurd nature of the reasons alleged in it by Dr. Price as a basis for his opinion that "it is utterly incomprehensible how any sane man can advocate the use of electricity" in pelvic troubles. He asks "Why not apply this all-powerful, this infallible and omnipotent curative effect of electricity to the resolution of abscesses found in the neck of strumous children?" and rightly says that mothers would pay well for such relief for their little ones. I beg to reply that there is no analogy between an abscess such as referred to and a purulent collection within a natural cavity. No one ever claimed to cure such abscesses by electricity, though many of us have had cases of veritable pus tubes get well under it by natural drainage through the uterus after the inflammatory occlusion had been removed by absorption. I am personally aware of three children who have been born after the electrical resolution of pyosalpinx, and in two of these cases several competent surgeons diagnosed double pyosalpinx.

The allusion to "strumous" glands of the neck reminds me though, that they are not so refractory to electricity as Dr. Price supposes, provided treatment is instituted before suppuration. Some recent cases yet unreported have proven to me that they may be reduced in size to a very material extent by being brought at intervals under the influence of the negative pole (with a clay electrode) of powerful galvanic currents.

The immediate effect is to cause so great a determination of blood to the enlarged gland as to temporarily increase its bulk, at the subsidence of which the tumor will generally be found smaller. Since it is now known that these so-called "strumous" glands are in reality tuberculous, a permanent reduction in their size, which has resulted in some of my cases, may well be accepted as a favorable result. Whether the bacilli are affected themselves or merely their products, is uncertain, but the probabilities are that decrease in size is due to the absorption of the products and irritative consequences of microbic action in this case, as well as in the hyperplastic pelvic disorders now so largely treated by the interpolar action of electric energy. If it were possible for me to disbelieve in germs like Dr. Price I would have greater faith in the resolving power of galvanic currents in these "strumous" glands, for a daily experience begets increasing confidence in our ability to use currents that will stimulate tissue changes to an extent fully equal to clearing up mere glandular infarctions; and even a lymphatic gland should be restored to function if possible, rather than removed from the body.

This excursion of Dr. Price's outside the pelvis is to be commended, for no one can deny that the present views of abdominal surgeons need a healthy comparsion with the work being done in less abused portions of the body.

G. BETTON MASSEY.

Wanted.—A Word.

The medical profession in general, and the surgical instrument dealers in particular, are much in need of a word that will properly describe a surgical instrument that has been so constructed that it may be rendered aseptic. Such instruments are usually called aseptic, but as they are septic until rendered *aseptic* by antiseptic methods, it follows that the name as now applied is a misnomer, because an instrument can hardly be both septic and aseptic at the same time. Will some one kindly supply this "long felt want?"

CHARLES TRUAX.

75 and 77 Wabash Ave.

[Aseptable?—EDITOR.]

BOOK REVIEWS.

HYGIENE AND PUBLIC HEALTH. By LOUIS C. PARKES, M.D., D.P.H., London University, etc. Third edition, with seventy-eight illustrations. Philadelphia: Blakiston, Son & Co. 1892. $2.75.

This is a work of 523 pages replete with invaluable information. In a small space it covers nearly the whole field of sanitary science. While it is intended primarily for students and medical men, every intelligent householder could profitably make the acquaintance of most of its contents. If the general public would do itself the favor to become conversant with the chapters on house drainage, water, heating, lighting, ventilation, smoke prevention, food, beverages, clothing, etc., it could reap benefits that would repay for the time and money invested a thousand fold.

In the prefaces to the first and third editions Dr. Parkes professes to have recorded the most recent advances of bacteriological and etiological investigation, but this edition bears internal evidence that not all the parts that bear directly on these subjects have been rewritten, for the nature of these rapidly developing sciences quickly reveals such neglect. There are discrepancies in the different sections that have to do with bacteriological data that can be accounted for on that hypothesis only, for in some places the reader is conscious of perusing a back number, while in others the facts are brought down to date. On page 68 he says: "Whether the choleraic diarrhœa is due to the presence of a living germ in the water, or to dead and decayed organic matter in solution or suspension, is not yet certain." On page 413 he insists that bacteriological

investigation "does not prove that the microbe is an indispensable antecedent (cause), or even an antecedent of the disease, or indeed that it is anything more than a consequence." He makes no effort to reconcile his position with the fact that a community may drink water from the same source year after year without the incidence of cholera or enteric fever until the characteristic bacilli infect the supply. On page 91 he concludes "that the biological test (of water) is valuable only for the confirmation it gives of the results of chemical analysis, and not because it is capable of throwing any further light on its dangerous or harmless qualities." Page 72: "Cholera epidemics appear to have been rendered practically harmless (in England) by ensuring an abundant supply of pure water." Page 443: "The comma bacillus may be regarded as pathognomonic of the disease (Asiatic cholera); and its presence when detected in the stools may be considered as sufficient to establish the diagnosis, etc." He emphasizes the danger of disseminating such diseases as cholera, typhoid fever and diphtheria through drainage channels and the necessity of preventing the entrance into sewers of the excreta from persons suffering with these maladies.

On the question of quarantine the author agrees with the position taken by Dr. Elmer Lee and denounces it as neither useful nor practicable. It cannot be denied that the experience of England during last summer's epidemic of cholera supports his view, and his recommendations are certainly humane. In this connection it is interesting to observe that the Illinois State Board of Health adopted resolutions at its last meeting precisely in line with Dr. Parkes' teachings at the University College.

Arsenical poisoning from inhaling particles of arsenic and the vapor of arseniuretted hydrogen from wall paper is explained.

The smoke nuisance in London, he concludes, cannot be abated except by the substitution of cheap coal gas for coal for domestic consumption. A lucid explanation of the manner and prevention of deaths from the use of odorless fuel gas is given, and it ought to prove highly interesting to the residents of Hyde Park, the home of the English aristocracy of Chicago.

Epidemic influenza is accorded the important consideration that its crippling and fatal effects demand. The death-rate in England was raised by nearly two per 1,000 by this disease, and the epidemic of 1892 was much more severe than it was in 1890 or 1891.

The book is a credit to the publishers and is deserving of popularity with the profession and the people.

SELECTIONS.

HYDROCHLORIC ACID IN THE STOMACH.—According to Ewald (*Berlin klin. Woch.*) a deficiency of hydrochloric acid in the stomach has, in recent years, been considered as indicating disturbed function and is not diagnostic of any definite organic lesion. During the first stage of digestion the acid present in the stomach is used up in neutralizing the different bases contained in the food. Later, the free hydrochloric acid increases in amount until it reaches from one and a half to two and a half parts in the thousand of gastric contents. The absence of free hydrochloric acid does not necessarily mean that the secreting power of the stomach is entirely lost. A certain amount of digestion can take place by the help of unstable compounds of the acid which are present in partially digested food. In three conditions free hydrochloric acid is absent: gastric carcinoma; chronic catarrh leading to atrophy of the mucous membrane; and severe nervous depression. Atrophy of the gastric mucous membrane is most common in old persons who have suffered from dyspepsia. The contents of the stomach contain no free hydrochloric acid, no pepsin, and no rennet ferment. Cancer may exist for a long time without being suspected, the symptoms pointing to a severe neurosis. To improve the muscular tone of the stomach, strychnine, belladonna, and physostigmine may be used. Good results may be obtained from exercise and massage, and from internal faradization. To prevent fermentative changes, the contents of the digestive tract should be made as far as possible unsuitable for the growth of micro-organisms. Resorcin, naphthalin, salicylate of bismuth and benzo-naphthol are recommended. The author especially recommends the latter in doses of from two to five grains a day. It is tasteless and non-irritant, and remains unacted upon in the stomach, but is split up in the intestine into naphthol and benzoic acid. —*Boston Medical and Surgical Journal.*

THE EXAMINATIONS FOR THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.—The examination of candidates for commissions in the medical department of the army, recently held at the army headquarters in New York, was not, says a writer in *The Tribune*, prolific in its results. Only four of the twenty-two who appeared before the Medical Board succeeded in filling the rigid requirements, professional and physical, for appointment as assistant surgeons. The officials of the Medical Department are gratified for the few successful candidates, considering their high qualifications, but they are also disappointed at the small percentage of the successful ones. On the other hand the applicants who failed in the examinations, and also their friends, feel their disappointment more keenly and complain bitterly about the severity of the examinations. The Surgeon-General's Department, however, prefers to go short-handed rather than reduce the standard of the examination, and soon another examination will be ordered to fill the six vacancies still remaining.—*Medical Record.*

BRIDGEPORT, CONN., prohibits the practice of irregular physicians within its limits. As Connecticut has no law regulating the practice of medicine, this municipal ordinance may stimulate it to the recognition of its duty.

MISCELLANY.

MIDDLETON GOLDSMITH LECTURE.—Dr. William P. Northrup has been invited by the trustees to deliver the above lecture before the New York Pathological Society in April next; subject to be later announced.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 24, 1892, to December 30, 1892.

Capt. Louis W. Crampton, Asst. Surgeon U. S, A., leave of absence granted is extended three months.

Capt. Marcus E. Taylor, Asst. Surgeon U. S. A., is granted two months ordinary leave of absence, to take effect upon the expiration of his present sick leave. By direction of the Secretary of War.

First Lieut. Frank T. Meriwether, Asst. Surgeon U. S. A., leave of absence for seven days granted is hereby extended ten days.

First Lieut. Benjamin L. Ten Eyck, Asst. Surgeon U. S. A., is relieved from duty at Ft. Leavenworth, Kan., and will proceed at once to San Antonio, Tex., and report to the commanding General, Dept. of Texas, for duty with the troops now in the field.

First Lieut. James D. Glennan, Asst. Surgeon U. S. A., will upon his arrival at his station (Ft. Sill, Oklahoma Ter.) from leave of absence, proceed immediately to San Antonio, Tex., and report in person to the commanding General, Dept. of Texas, for temporary duty in the field with troops operating on the Mexican border.